

**Dhananjayrao Gadgil Library**



**GIPE-PUNE-010408**

**PUBLICATIONS OF THE  
NATIONAL BUREAU OF ECONOMIC RESEARCH,  
INC.**

**NUMBER 25**

**GERMAN  
BUSINESS CYCLES  
1924-1933**

The National Bureau of Economic Research was organized in 1920 in response to a growing demand for scientific determination and impartial interpretation of facts bearing upon economic and social problems. Freedom from bias is sought by the constitution of its Board of Directors without whose approval no report may be published. Rigid provisions guard the National Bureau from becoming a source of profit to its members, directors or officers, or from becoming an agency for propaganda.

### Officers

OSWALD W. KNAUTH, <i>Chairman</i>	GEORGE SOULE, <i>Vice-President</i>
JOSEPH H. WILLITS, <i>President</i>	SHEPARD MORGAN, <i>Treasurer</i>
CHARLES A. BLISS, <i>Executive Secretary</i>	

### Research Staff

WESLEY C. MITCHELL, <i>Director of Research</i>	
ARTHUR F. BURNS	FREDERICK R. MACAULAY
SIMON KUZNETS	FREDERICK C. MILLS
LEO WOLMAN	
EUGEN ALTSCHUL, <i>Associate</i>	

### Directors at Large

OSWALD W. KNAUTH	ELWOOD MEAD
H. W. LAIDLER	SHEPARD MORGAN
L. C. MARSHALL	GEORGE SOULE
GEORGE O. MAY	N. I. STONE

### Directors by University Appointment

EDWIN F. GAY, <i>Harvard</i>	HARRY ALVIN MILLIS, <i>Chicago</i>
WALTON H. HAMILTON, <i>Yale</i>	WESLEY C. MITCHELL, <i>Columbia</i>
HARRY JEROME, <i>Wisconsin</i>	JOSEPH H. WILLITS, <i>Pennsylvania</i>

### Directors appointed by other Organizations

HUGH FRAYNE	GEORGE E. ROBERTS
<i>American Federation of Labor</i>	<i>American Bankers Association</i>
DAVID FRIDAY	M. C. RORTY
<i>American Economic Association</i>	<i>American Statistical Association</i>
LEX GALLOWAY	ARCH W. SHAW
<i>American Management Association</i>	<i>National Publishers Association</i>
ROBERT B. WOLF	
<i>American Engineering Council</i>	

**RELATION OF THE DIRECTORS  
TO THE WORK OF THE NATIONAL BUREAU  
OF ECONOMIC RESEARCH**

1. The object of the National Bureau of Economic Research is to ascertain and to present to the public important economic facts and their interpretation in a scientific and impartial manner. The Board of Directors is charged with the responsibility of ensuring that the work of the Bureau is carried on in strict conformity with this object.

2. To this end the Board of Directors shall appoint one or more Directors of Research.

3. The Director or Directors of Research shall submit to the members of the Board, or to its Executive Committee, for their formal adoption, all specific proposals concerning researches to be instituted.

4. No study shall be published until the Director or Directors of Research shall have submitted to the Board a summary report drawing attention to the character of the data and their utilization in the study, the nature and treatment of the problems involved, the main conclusions and such other information as in their opinion will serve to determine the suitability of the study for publication in accordance with the principles of the Bureau.

5. A copy of any manuscript proposed for publication shall also be submitted to each member of the Board. If publication is approved each member is entitled to have published also a memorandum of any dissent or reservation he may express, together with a brief statement of his reasons. The publication of a volume does not, however, imply that each member of the Board of Directors has read the manuscript and passed upon its validity in every detail.

6. The results of an inquiry shall not be published except with the approval of at least a majority of the entire Board and a two-thirds majority of all those members of the Board who shall have voted on the proposal within the time fixed for the receipt of votes on the publication proposed. The limit shall be forty-five days from the date of the submission of the synopsis and manuscript of the proposed publication unless the Board extends the limit; upon the request of any member the limit may be extended for not more than thirty days.

7. A copy of this resolution shall, unless otherwise determined by the Board, be printed in each copy of every Bureau publication.

*(Resolution of October 25, 1926, revised February 6, 1933)*

**GERMAN  
BUSINESS CYCLES  
1924 - 1933**

**CARL T. SCHMIDT**

RESEARCH ASSOCIATE, NATIONAL BUREAU  
OF ECONOMIC RESEARCH, 1931-1932

---

**NATIONAL BUREAU OF ECONOMIC RESEARCH**

**NEW YORK · 1934**

**Gokhale Institute of Politics  
and Economics, Poona 4.**

COPYRIGHT, 1934, BY NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.,  
1819 BROADWAY, NEW YORK, N. Y. ALL RIGHTS RESERVED

X : 74.55

G 4

10408

TYPOGRAPHY: ERNST REICHL  
PRINTED AND BOUND IN THE UNITED STATES OF AMERICA  
BY H. WOLFF, NEW YORK

## PREFACE

INSIGHT into the dynamics of economic activities may be sharpened by analysis of fluctuations in an economy so 'disturbed', so subject to influence by 'non-business' factors, as that of Germany in recent years. The present study undertakes an analysis of cyclical fluctuations in German economy during the period 1924-33. It seeks to describe their course, to point out peculiarities in it, to emphasize the nature and the relationships of the more significant contributing factors.

The study indicates that German economy in the years 1924-33 was subject to powerful influences arising out of structural changes in the working population, in the technique of industrial production, in business organization and in the financing process. Enmeshed with such fundamental modifications was a rhythm of cyclical fluctuations. The conclusions make no pretension of offering a general explanation of the 'business cycle'. Analysis limited to one country over a period of relatively few years can, it is believed, add little to the present theories relating to the *recurrence* of cycles in a money economy. Therefore, the attempt here is to sketch the con-

tours of the rhythm of a particular economy over a limited period, to direct attention to *unique* aspects of its cyclical behavior, and to offer some explanation. It is hoped that thus a contribution to the understanding of the nature of business cycles may be made. Examination of the many-faceted cycles of history may lead ultimately to more universal generalizations.

A viewpoint expressed by Wesley C. Mitchell has provided the approach: "In our effort to give an intelligible account of business cycles, reasoning must be our chief concern, but it should be reasoning which deals and squares with observations, and the observations should have as wide a sweep as we can get from statistics, and as much subtlety as we can get from personal experience."<sup>1</sup>

The aim, then, is analytic description, based upon statistical and historical sources. Description is in terms of cyclical changes apparent in major aspects of German economy. So far as they are available, time series representative of industrial and agricultural production, commodity and security prices, credit and capital, employment and business enterprise, domestic and foreign trade, provide the framework for the analysis and discussion of such changes. Historical materials of various sorts—business journals, official reports and monographs—supplement the statistical data.

<sup>1</sup> *Business Cycles: The Problem and Its Setting* (National Bureau of Economic Research, 1927), p. 470.



Presentation is according to the following plan: A brief introductory chapter is intended to afford some understanding of the major developments in German economy from 1919 to 1923. It indicates the general nature of structural changes wrought by the World War, the Treaty of Versailles and the currency inflation. The second chapter describes concisely the course of cyclical fluctuations in Germany during the years 1924-33. Discussion of fluctuations in the elements noted above is based upon changes apparent in time series and in business reviews, and follows the sequence of cyclical phases: depression, recovery, prosperity and recession. This chapter also emphasizes the nature of certain significant aspects of German economy in the post-inflation period, notably capital and credit, agricultural and industrial production, prices, employment, foreign trade. Chapter III, embodying the main contributions of the study, presents the results of statistical analysis of representative time series relating to the post-inflation period. The analysis is based upon a technique developed by the National Bureau of Economic Research. The series are examined with a view to determining whether they show cyclical fluctuations, and, if they do, to indicate the duration, timing and amplitude, and the correspondence with concurrent fluctuations in other series. In order to illumine similarities and differences in pre-War and post-inflation cycles, series relating to cyclical movements occurring before the War, par-  
ix]

ticularly in the period 1900-14, are analyzed. The cycles in these two periods are also compared in respect of their international relationships. The study ends with a review of its major findings and a consideration of certain of their implications.

The investigation was begun in 1930, when I was a traveling fellow of the University of California, and continued and substantially completed in 1931 and 1932, during which time I was research associate at the National Bureau of Economic Research. I am very grateful to these institutions for their generous assistance. From the Directors and research staff of the National Bureau I have had much help. Especially valuable suggestions for improvement were made by Professors Wesley C. Mitchell, Edwin F. Gay, Frederick C. Mills and Harry Jerome, Colonel Malcolm C. Rorty, Drs. Simon Kuznets, Eugen Altschul and A. G. Silverman, and Mr. Charles A. Bliss. Miss Martha Anderson edited the manuscript with much care. The charts were made by Miss Dorothy Achilles. During the progress of the study I have been greatly helped by Mr. Erich A. Otto, who had a large share in the task of computation and who also contributed various suggestions. Professor Ernst Wagemann and the staffs of the Statistisches Reichsamt and German Institut für Konjunkturforschung were of much assistance in enabling me to gather materials. Professors N. J. Silberling and Robert A. Brady of the University of California offered constructive criticisms during the early course of the

study. Drs. Gerhard Colm and Hans Neisser read the final manuscript and suggested various changes. Valued help has been given by my wife at all stages of the work. To all who have assisted me I offer my sincere thanks.

C. T. S.

*Washington, D. C.,  
December 26, 1933*

## CONTENTS

PREFACE	vii
I THE TREATY OF VERSAILLES, INFLATION AND STABILIZATION	3
1. The World War and the Treaty of Versailles	4
2. The Currency Inflation	8
3. The Year 1923: Ruhr Invasion and Currency Stabilization	15
II REVIEW OF ECONOMIC CONDITIONS, 1924-1933	25
A. The Course of the Post-Inflation Business Cycles	25
1. Depression, Halting Revival, Definite Recovery, 1924-1925	25
a. Post-stabilization Depression	26
b. Halting Revival	27
c. Definite Recovery	31
2. Recession and Depression, 1925-1926	35
3. Recovery and Prosperity, 1926-1928	40
a. Business Consolidation During Depression	40
b. Expansion	44
	xiii]

4. Recession and Depression, 1928-1932	47
a. Slow Decline	47
b. Deepening Depression	53
5. Hesitant Revival, 1932-1933	57
6. Summary	60
<b>B. Significant Aspects of German Economy, 1924-1933</b>	<b>65</b>
1. Capital and Credit	72
a. Capital Losses, 1914-1922	72
b. Domestic Accumulation of Capital, 1924-1933	77
c. Inflow of Foreign Capital, 1924-1930	82
d. The Reichsbank, the Money Market and the Credit System	88
2. Industrial Production	93
3. Agricultural Production	96
4. The Price System	101
5. Employment	105
6. Foreign Trade and the Balance of International Payments	110
<b>III STATISTICAL ANALYSIS OF CYCLICAL FLUCTUATIONS IN SELECTED TIME SERIES, 1924-1933</b>	<b>115</b>
1. The Technique of Measuring Cyclical Behavior	119
2. Comparison of Cyclical Fluctuations in German Economy During Pre-War and Post-Inflation Periods	125

a. The Duration of Pre-War and Post-Inflation Cycles	129
b. Conformity of Various Series to the Cyclical Reference-Pattern in Pre-War and Post-Inflation Periods	133
c. Cyclical Turning Points in Pre-War and Post-Inflation Cycles	139
d. The Amplitudes of Pre-War and Post-Inflation Cycles	144
e. Summary	169
3. Cyclical Behavior of Significant Groups in German Economy, 1924-1933	170
a. Industrial and Agricultural Production	172
b. Currency, Credit and Capital	189
c. Commodity and Security Prices	200
d. Employment and Wages	210
e. Business Organization and Enterprise	218
f. Domestic Trade	223
g. Foreign Trade	231
4. International Relationships of German Business Cycles	240
 IV CONCLUSIONS	 261
 INDEX	 277

## TABLES

1	Indexes of Foreign Exchange, Prices and Ordinary Currency Circulation, 1919-1923	9
2	Evidence of the Volume of Savings, 1924-1931	79
3	Private Discount Rates on Prime Bankers' Acceptances	82
4	Estimate of Foreign Investments in Germany, 1924-1931	83
5	Germany's Balance of International Payments, 1924-1932	111
6	Reference Dates for Business Cycles in Germany, 1879-1932	131
7	Conformity of Various Series to Reference Cycles in Pre-War and Post-Inflation Periods	134
8a	Relative Dispersions of Specific Turning Points of 18 Monthly and Quarterly Series Representative of Pre-War and Post-Inflation German Economy	141
8b	Relative Dispersions of Specific Turning Points of 23 Annual Series Representative of Pre-War and Post-Inflation German Economy	142
9	Amplitude of Specific Cycle Fluctuations in German Time Series during Pre-War and Post-Inflation Cycles	146

10	Cyclical Behavior of Series Relating to Industrial and Agricultural Production, 1924-1933	176
11	Cyclical Behavior of Series Relating to Currency, Credit and Capital, 1924-1933	192
12	Cyclical Behavior of Series Relating to Commodity and Security Prices, 1924-1933	204
13	Cyclical Behavior of Series Relating to Employment and Wages, 1924-1933	212
14	Cyclical Behavior of Series Relating to Business Organization and Enterprise, 1924-1933	220
15	Cyclical Behavior of Series Relating to Domestic Trade, 1924-1933	226
16	Cyclical Behavior of Series Relating to Foreign Trade, 1924-1933	234
17	Contemporary Phases of Business Cycles in Fifteen Countries, 1924-1932, by Half-Years	250
18a	Extent of Agreement and Difference in Phase in the Business Cycles of Germany and Each of Fourteen Other Countries, 1924-1932	255
18b	Extent of Agreement and Difference of Phase in the Business Cycles of Germany and Each of Nine Other Countries, 1900-1914	256
19a	Number of Instances of Agreement, Partial Agreement, and Opposition of Phase in the Cyclical Fluctuations of Germany and Each of Fourteen Other Countries, 1924-1932	257
19b	Number of Instances of Agreement, Partial Agreement, and Opposition of Phase in the Cyclical Fluctuations of Germany and Each of Nine Other Countries, 1900-1914	258



20a	Number and Percentage of Periods of Agreement and Difference of Phase in the Business Cycles of Germany and Each of Fourteen Other Countries, 1924-1932	259
20b	Number and Percentage of Periods of Agreement and Difference of Phase in the Business Cycles of Germany and Nine Other Countries, 1900- 1914	260

## CHARTS

1	Time Series Illustrative of Cyclical Fluctuations in German Economy, 1924-1933	66
2	Cyclical Behavior of Series Relating to Industrial and Agricultural Production, 1924-1933	180
3	Cyclical Behavior of Series Relating to Currency, Credit and Capital, 1924-1933	196
4	Cyclical Behavior of Series Relating to Commodity and Security Prices, 1924-1933	206
5	Cyclical Behavior of Series Relating to Employment and Wages, 1924-1933	214
6	Cyclical Behavior of Series Relating to Business Organization and Enterprise, 1924-1933	221
7	Cyclical Behavior of Series Relating to Domestic Trade, 1924-1933	228
8	Cyclical Behavior of Series Relating to Foreign Trade, 1924-1933	236

**GERMAN  
BUSINESS CYCLES  
1924-1933**

## CHAPTER ONE

# THE TREATY OF VERSAILLES, INFLATION AND STABILIZATION

THE fateful decade of war, revolution and currency inflation—1914–24—witnessed sweeping changes in the economic life of Germany. On the eve of the World War, Germany was one of the great economic powers of the world. In industrial activity, in world commerce, in international finance, in the aggressiveness and resourcefulness of its business leaders, it challenged or surpassed every one of its rivals. Ten years later the formerly powerful German economy was perilously near the brink of chaos. The tremendous spiritual and material demands of a disastrous war, the acceptance of the severe provisions of the treaty of peace, the domestic instability attending political revolution, and the catastrophic currency inflation—these factors had wrought havoc in the business life of the nation.

Some notion of the economic consequences of Germany's defeat in the World War and of its plunge into the maelstrom of inflation is essential

to an appreciation of the character of the fluctuations in its economy after the return to more stable conditions, for certain peculiar features of these fluctuations were intimately related to structural changes imposed upon it by the War, the peace treaty and the currency inflation.

## 1. THE WORLD WAR AND THE TREATY OF VERSAILLES

Public opinion in Germany has been inclined to hold the loss of the World War, and the consequent terms of the treaty of peace, as ultimately responsible for all the economic difficulties of that nation since 1918. Thus it was declared in an official memorandum that, because of the Treaty of Versailles, "all of the favorable conditions of the period before the War have disappeared; all the unfavorable conditions have been strengthened."<sup>1</sup> The full implications of this statement can hardly be admitted to be correct. Certainly the economic misfortunes of Germany were to a large extent a part of the general economic misfortunes of post-War Europe. Nevertheless, defeat and the Treaty of Versailles did result in changes in Germany's economic structure that were of particular significance in the subsequent course of its economic life.<sup>2</sup>

<sup>1</sup> *Deutschlands Wirtschaft, Wahrung, und Finanzen* (Berlin, 1924) p. 37.

<sup>2</sup> On the post-War changes in German economy see James W. Angell, *The Recovery of Germany* (Yale University Press, 1929), pp. 1-16; F. D.

The loss of European territory, with its attendant losses of sources of industrial raw materials and productive equipment, was serious from the economic viewpoint. The provisions of the Versailles Treaty reduced the 1913 area of Germany by 13.05 per cent. The ceded territories<sup>3</sup> had produced 15.7 per cent of the total value of the German coal output in 1913; 48.2 per cent of the iron ore; 58.8 per cent of the zinc ore; 25.6 per cent of lead ore.<sup>4</sup> Especially significant for the future of German industry was the loss of the great Lorraine iron area. The peace treaty erected national barriers across it, and the German iron and steel industry was thereby forced into considerable dependence upon foreign sources of supply. The separation of the Saar region and of a part of Upper Silesia had much the same effect.

Self-sufficiency was further limited by the loss of important arable land, about 15.5 per cent of the 1913 area. As the War and the Treaty reduced the population by only about 10 per cent, the area available for cultivation was thus relatively, as well as absolutely, smaller than in 1913. The loss of large

Graham, *Exchange, Prices, and Production in Hyper-Inflation: Germany, 1920-1923* (Princeton University Press, 1930), pp. 16-30; Statistisches Reichsamt, *Deutschlands Wirtschaftslage unter den Nachwirkungen des Weltkrieges* (Zentralverlag, Berlin, 1923); Harms, ed., *Strukturwandlungen der Deutschen Volkswirtschaft* (Reimar Hobbing, Berlin, 1929).

<sup>3</sup> The territories surrendered by Germany in accordance with the Treaty of Versailles were: Alsace-Lorraine, Eupen and Malmédy, North Schleswig, parts of West Prussia, Posen and Silesia, and Memel.

<sup>4</sup> Wladimir Woytinsky, *Zehn Jahre Neues Deutschland* (Rudolf Mosse, Berlin, 1929), p. 35.

portions of the Eastern Provinces made for a considerable change in the source of food supplies. Of the total German agricultural production in 1913 the ceded territories of East Prussia, West Prussia and Posen produced 14 per cent of the rye, 6 per cent of the wheat, 12 per cent of the barley, 6 per cent of the oats, 14 per cent of the potatoes and 17 per cent of the sugar beets.<sup>5</sup> The inhabitants of these regions constituted only about 5 per cent of the total 1913 population of Germany. Domestic food production was materially reduced and the necessity for additional importations of foodstuffs correspondingly increased.<sup>6</sup>

The loss of industrial equipment that attended the territorial cessions was not so disastrous as was at first supposed and was quickly more than restored in the post-War German territory.<sup>7</sup> However, the domestic market for many industrial products was relatively smaller than before the War; that is, there was greater dependence upon sales in foreign countries.

<sup>5</sup> Harms, *op. cit.*, p. 23. See also Woytinsky, *op. cit.*, pp. 33-5.

<sup>6</sup> In fact, the average annual production of rye from 1924 to 1931 was 24 per cent less than the average of 1911, 1912 and 1913 (within the present boundaries of Germany); wheat production was 11 per cent less; barley, 2 per cent less; oats, 18 per cent less; only potatoes increased by 5 per cent. (No comparable data of sugar beet production are available.) Yield per acre was in most instances less than before the War. (See Statistisches Reichsamt, *Statistisches Jahrbuch für das Deutsche Reich, 1928*, Berlin, 1928, pp. 72, 73; and the same source for 1931, pp. 62-3; Sonderabdruck, *Deutscher Reichsanzeiger und Preussischer Staatsanzeiger*, Nr. 300, December 24, 1931.)

<sup>7</sup> Harms, *op. cit.*, p. 22.

(The reduction in national wealth during the War and its continuing outflow in fulfillment of the reparation provisions of the peace treaty was perhaps the most significant change)<sup>8</sup> This shrinkage in productive wealth made it impossible for Germany to discharge its international obligations and reconstruct its economy solely by means of its own resources. Beginning in 1924—that is, as soon as the domestic, political and economic situation was more favorable—it became an eager borrower of foreign capital. Germany was thus transformed from “one of the world’s great creditor nations . . . to the world’s largest debtor nation on both governmental and private account.”<sup>9</sup>

Economically, the Germany of 1920 was thus different from the Germany of 1913, more specialized, less self-sufficient. Its population was reduced, but its area was reduced even more. This loss placed greater emphasis upon the finishing processes of German industry and less upon the production of raw materials (it made Germany less of an agricultural nation; it narrowed the domestic market for finished goods and increased the pressure to export them.) That is, Germany was more dependent upon foodstuffs and raw material imports, and, at the same time, more dependent upon foreign markets for the export of its industrial products. It was

<sup>8</sup> See Ch. II, Part B, Sec. 1, b, for estimates of the losses in national wealth in the period 1914-23.

<sup>9</sup> Angell, *op. cit.*, p. 301.



obliged to become a heavy borrower of foreign capital funds.

(The implications of these changes—at least so far as this study is concerned—would seem to be that (a) post-War fluctuations in German economy would be more conspicuously industrial and less markedly agricultural phenomena than before the War; (b) such fluctuations would tend to be much influenced by international factors; (c) the shortage of domestic capital and the correspondingly great dependence upon foreign sources would make for a condition of chronic strain and would lead to extreme sensitivity to changes in world credit conditions.)

## 2. THE CURRENCY INFLATION

(The period of the currency inflation, lasting from the end of the War until the autumn of 1923, was characterized by further serious modifications of Germany's economic life—modifications that were reflected in the business fluctuations of the years following stabilization.—Undoubtedly, the central factor making for those changes was the depreciation of the mark—starting slowly, and then proceeding ever faster, until finally the mark was plunged into the abyss of virtual worthlessness.

The movements of the foreign exchange rates, of wholesale prices and of ordinary currency circulation, during the period 1919–23, give a fairly ac-

**TABLE I**  
**INDEXES OF FOREIGN EXCHANGE, PRICES AND ORDINARY**  
**CURRENCY CIRCULATION<sup>1</sup>**

1919-1923

(monthly averages)

YEAR AND MONTH	FOREIGN EXCHANGE MARKS PER DOLLAR (Par=1)	WHOLESALE PRICES (1913=1)	ORDINARY CURRENCY CIRCULATION (1913=1)
<i>1919</i>			
January	2.03	2.62	5.69
February	2.21	2.70	5.81
March	2.48	2.74	6.14
April	3.05	2.86	6.35
May	3.10	2.97	6.58
June	3.36	3.08	7.04
July	3.57	3.39	6.90
August	4.70	4.22	6.74
September	6.35	4.93	7.00
October	6.55	5.62	7.15
November	9.40	6.78	7.48
December	11.40	8.03	8.27
<i>1920</i>			
January	15.4	12.6	8.4
February	23.7	16.9	9.0
March	20.0	17.1	9.8
April	14.2	15.7	10.3
May	11.1	15.1	10.6
June	9.3	13.8	11.3
July	9.4	13.7	11.5
August	11.5	14.5	11.9
September	13.8	15.0	12.5
October	16.2	14.7	12.8
November	18.4	15.1	12.8
December	17.4	14.4	13.5

TABLE 1 (cont.)

INDEXES OF FOREIGN EXCHANGE, PRICES AND ORDINARY  
CURRENCY CIRCULATION<sup>1</sup>  
1919-1923  
(monthly averages)

YEAR AND MONTH	FOREIGN EXCHANGE MARKS PER DOLLAR (Par=1)	WHOLESALE PRICES (1913=1)	ORDINARY CURRENCY CIRCULATION (1913=1)
<i>1921</i>			
January	15.5	14.4	13.0
February	14.6	13.8	13.2
March	14.9	13.4	13.3
April	15.1	13.3	13.4
May	14.9	13.1	13.5
June	16.5	13.7	14.0
July	18.3	14.3	14.3
August	20.1	19.2	14.6
September	25.0	20.7	15.6
October	35.6	24.6	16.4
November	62.5	34.2	18.0
December	45.5	34.9	20.3
<i>1922</i>			
January	45.5	36.7	20.5
February	49.0	41.0	21.3
March	67.5	54.3	23.2
April	69.0	63.6	24.8
May	69.0	64.6	26.8
June	76.0	70.3	29.8
July	118.0	100.6	33.5
August	270.0	192.0	41.7
September	350.0	287.0	54.8
October	760.0	566.0	79.9
November	1,710.0	1,154.0	126.8
December	1,810.0	1,475.0	213.4
<i>1923</i>			
January	4,300	2,785	329
February	6,700	5,585	583
March	5,050	4,888	913

TABLE 1 (cont.)  
 INDEXES OF FOREIGN EXCHANGE, PRICES AND ORDINARY  
 CURRENCY CIRCULATION<sup>1</sup>  
 1919-1923  
 (monthly averages)

YEAR AND MONTH	FOREIGN EXCHANGE MARKS PER DOLLAR (Par=1)	WHOLESALE PRICES (1913=1)	ORDINARY CURRENCY CIRCULATION (1913=1)
1923			
April	5,850	5,212	1,088
May	11,400	8,170	1,424
June	26,200	19,385	2,865
July	92,000	74,787	7,231
August	1,110,000	944,041	110,181
September	23,600,000	23,948,898	4,653,115
October	6,000,000,000	7,094,800,000	413,000,000
November	530,000,000,000	725,700,000,000	65,954,000,000
December	1,000,000,000,000	1,261,600,000,000	81,810,000,000

<sup>1</sup> Angell, *op. cit.*, pp. 365, 366.

curate impression of the increasingly difficult position in which the country found itself. The movements of all other indexes in terms of paper marks—wages, cost of living, public debt of the Reich, volume of Reichsbank credit—tell a substantially similar story.<sup>10</sup>

(The inflation assumed astronomical dimensions. At its height, it was a dizzy round of exchange depreciation and rocketing prices.) Finally, in the middle of November 1923, when the paper mark exchanged at the rate of 4,200,000,000,000 to the dollar, it was replaced by a new currency. Thus the

<sup>10</sup> For accounts of the course and effects of the inflation, see Graham, *op. cit.*, Angell, *op. cit.*, pp. 17-60.

period of inflation was suddenly closed by the extinction of the paper mark itself.

The currency inflation had grave repercussions upon the economic life of Germany. "The distribution of wealth and income was violently altered, and in a way which greatly reduced the general buying power of the German people . . . and the general state of industrial technique remained stagnant. Many of the new enterprises and giant combines which sprang up during the inflation were also inherently unsound, and at the stabilization collapsed into mere wreckage. Even after all allowance for the direct effects of the Treaty cessions, industrial Germany was far weaker at the close of 1923 than she had been at the beginning of 1919."<sup>11</sup>

The consequences most significant for the cyclical pattern of the years after the stabilization are those affecting industrial production, business organization and the loss of capital.

During most of the inflation period the progressive depreciation of the currency stimulated industrial activity and kept the mines and factories working full blast. The margin of industrial profits was widened by the reduction in capital charges—the result of the cancellation of long-term debts—and by the lag of wages and taxes behind the rising commodity prices. Demand for industrial goods during most of this period remained quite active, in part because of the feverish desire of many persons to

<sup>11</sup> Angell, *op. cit.*, p. 58.

convert the depreciating mark currency into anything that had inherent worth—and in part because the general lag of wholesale prices behind the rapidly rising foreign exchange rates made for a large export market. When, finally, after stabilization, this stimulus to exportation disappeared, many enterprises found themselves in difficulties, for the crippled buying power of the domestic market revived only slowly.

(But the War and inflation, by discouraging the importation of manufactured goods, gave German industry considerable freedom from foreign competition in home markets.) This, together with relatively low production costs during the inflation, tended to discourage possible technical and administrative improvements.) “When the stabilization once more exposed Germany to world competition, she found that her industrial technique was years behind, and had to undertake a painful and costly reorganization.”<sup>12</sup> As is indicated in the discussion of the post-stabilization fluctuations, this reorganization was a factor in shaping their pattern, and was strikingly reflected in unemployment and in business mortality.

The inflation period also affected the number and forms of business organizations. For one thing, it led to the founding of many new enterprises. “The chaotic and fluctuating state of prices . . . gave the shrewd trader innumerable opportunities

<sup>12</sup> *Ibid.*, p. 47.

to make a profit. . . . But the chief explanation was doubtless the fact that large numbers of clerks, officials, and others with more or less fixed incomes saw the value of what they received steadily declining as the depreciation progressed, and concluded that the only way to survive was to set up in business for themselves, where they might benefit instead of suffer from rising prices." Thus new firms, "mostly small and weak," were rapidly formed. The number of separate enterprises at the end of the inflation was "four or five times what it had been before the War." This was to aggravate the cyclical fluctuations of the post-inflation period. Inflation also affected the pattern of German business organization by encouraging a revival of the cartel movement and a development of enormous combines and trusts.<sup>13</sup>

Finally, the period of inflation witnessed a further reduction in national wealth, emphasizing even more Germany's dependence on foreign capital and heightening its sensitivity to credit influences. During the years 1919-23 productivity declined markedly.<sup>14</sup> Probably almost all of the foreign investments of Germany remaining after the War were

<sup>13</sup> *Ibid.*, pp. 49-55.

<sup>14</sup> The 1913 national income (within the confines of the post-War German boundaries) has been estimated at approximately 45.7 milliard gold marks (Statistisches Reichsamt, *Das deutsche Volkseinkommen vor und nach dem Kriege*, Einzelschrift Nr. 24 zur Statistik des Deutschen Reichs, Berlin, 1932). By 1923, the last year of the inflation, it probably had fallen to 60 per cent of this sum (in terms of 1913 purchasing power of the mark). One milliard = 1,000 million.

lost during this period. The flight from the mark led to a very appreciable export of capital and to a very large transfer of assets from German to foreign hands. Much of the industrial plant and equipment erected in desperation during the inflation was found subsequently to be a technically inefficient addition to the country's productive capacity. No really accurate estimates can be made of the loss of actual and potential capital during the five years of inflation. However, it is certain that the lessened industrial productivity, the export and the uneconomical investment of capital funds, and the failure to restore wasted savings—so characteristic of this period—contributed very largely to the capital poverty of Germany at the end of 1923.

### 3. THE YEAR 1923: RUHR INVASION AND CURRENCY STABILIZATION

The last year of the inflation, 1923, witnessed a series of critical political and economic events: a military occupation of the Ruhr industrial district, the complete collapse of the paper mark, currency stabilization and a deep depression in the autumn. Particular implications of these events were to be of importance in the history of the succeeding years.

The reparation problem came to a crisis in the last months of 1922. Germany was granted a temporary moratorium on cash payments in the au-



tumn, and it was doubtful that any considerable payments could be made in the following year. The French government held that coercive measures, particularly the occupation of additional German territory, were necessary in order to ensure further payments. At the Conference of Prime Ministers in December 1922 and January 1923 France and Great Britain were unable to agree on the problem of reparations. On December 26, 1922 the Reparation Commission declared Germany in voluntary default of timber deliveries, and on January 9 it declared Germany in default of deliveries of coal. The French government then asserted that the Treaty of Versailles entitled France to take independent action, and French and Belgian troops began to march into the Ruhr district. By the end of January 1923, Franco-Belgian control of the major part of that highly industrialized region was complete.

The German government contended that the occupation constituted a violation of the Treaty of Versailles, and decided to oppose the occupation by every means except armed resistance. It suspended deliveries in kind to France and Belgium on January 13. The Ruhr coal mine owners refused to continue deliveries, and when the French and Belgians tried to move the coal and coke already mined the German government called upon railroad and Rhine navigation officials not to transport these commodities. This measure completely tied up Ruhr traffic, blocked the Rhine ports with barges,

and eventually necessitated the operation and management of the railroads by a Franco-Belgian administration. Further, local government officials of the Ruhr refused to cooperate with the French and Belgians; this movement spread throughout the Rhineland, except in the region occupied by the British. Hotel- and restaurant-keepers joined with the shop-keepers in boycotting the troops.

The passive resistance of the German government and people called forth coercive measures on the part of the occupying powers. The Interallied Rhineland Commission issued a series of ordinances seizing the coal tax, customs receipts and revenues from state-owned forests, and placing the coal under the complete control of the Franco-Belgian mission. Further retaliation took the form of fining, imprisoning and deporting Government officials, industrialists and mine superintendents, expelling customs and railway employees, confiscating state properties, seizing Reichsbank funds, requisitioning hotels and restaurants, and closing shops.

Such an occupation of the great industrial region of Germany obviously had serious effects. Many mines and factories in the Ruhr were closed, and production was much reduced. A succession of bloody encounters between the troops and the people in the streets, mines and factories aggravated conditions.

It is evident not only that unoccupied Germany must have suffered considerably from this cessation

of industrial activity in the Ruhr but also that the finances of the Government must have been subjected to intense strain as a result of the policy of lending monetary aid to those engaged in passive resistance. Cut off from its principal industrial and mining center, deprived of its coal supply and forced to import large quantities of fuels from foreign countries, Germany experienced increasing difficulty in replenishing its supplies of the necessities of life, of coal and of raw materials, and in keeping its industrial machinery in operation. In fact, German economic activity collapsed visibly during the summer of 1923 under the heavy weight of the burdens imposed upon it.<sup>15</sup>

The occupation of the Ruhr had a disastrous effect also upon the mark currency. In November and December 1922 between 7,000 and 8,000 marks exchanged generally for one dollar. Beginning in January 1923, however, the price of the dollar rose so swiftly that at the end of that month 50,000 marks were paid for one dollar. The Reichsbank's attempt to support the mark exchange was success-

<sup>15</sup> Much valuable information concerning the Ruhr occupation is contained in the publication of the Statistisches Reichsamt, *Wirtschaft und Statistik*, Vols. 3, 4 and 5 (Berlin, 1923, 1924, 1925). See also Ludwig Elster, ed., *Volkswirtschaftliche Chronik für das Jahr 1923* (Gustav Fischer, Jena, 1924); Guy Greer, *The Ruhr-Lorraine Industrial Problem* (Macmillan, 1925); Henri Lichtenberger, *The Ruhr Conflict* (Carnegie Endowment for International Peace, Washington, 1923); Ernst Schultze, ed., *Ruhrbesetzung und Weltwirtschaft* (Gloekner, Leipzig, 1927).

ful for a short time. Within the first two weeks of February the dollar quotation was brought down to 23,500 marks, and was held about that point until April 18, when the entire campaign of the Reichsbank broke down. The political and economic pressure, arising largely out of conditions in the Ruhr and Rhineland, the paralysis of the most important industrial regions, the resulting increased imports and diminished exports—all made it impossible for the bank to support the mark longer. The financing of the Ruhr resistance was given over to the printing presses; only an insignificant portion of the Reich's outlays were covered by taxes. From then on the currency depreciated rapidly.<sup>16</sup>

In July began the repudiation of the mark. Sellers refused to accept marks, first in the occupied territories, later throughout the entire country. Many retail shops closed early in the day; others were open only a few days of the week. Farmers refused to sell their products for depreciating marks. The catastrophe of the currency developed into a catastrophe of food and other supplies. Plunderings and riots occurred almost daily; finally on September 27, 1923, to cope with the social dangers that the collapse of the mark had evoked, the Reich declared a state of siege.

A Nationalist counter-revolution broke out in Bavaria. This led to Communist disturbances in

<sup>16</sup> This is best illustrated by the fluctuations of foreign exchange; see Table 1.

Saxony and Thuringia. In the Rhineland and in the Palatinate separatist agitation was rife.

The fall of the mark was accompanied by a tremendous rise in the prices of all commodities. Measured in terms of gold marks, there was a four- or five-fold increase in the cost of living during 1923.<sup>17</sup> Measured in terms of paper marks, the index of the cost of living rose from 1,120 in January to 1,247,000,000,000 on November 26.<sup>18</sup> Wages and salaries lagged considerably behind prices of commodities. An ever-increasing number of families were reduced to a bare minimum of subsistence by this widespread leveling down of wages and salaries.

During 1923 the number of unemployed workers rose startlingly. Unemployment allowances were given to 150,220 persons in January. In September, in the unoccupied territory alone, 534,360 were recipients, and in December, 1,532,065.<sup>19</sup> Thus the purchasing power of the workers was reduced. Continuing inflation signified the destruction of the savings of the middle class. The standard of living, particularly of the urban population, declined seriously. The decline in purchasing power is evident in numerous indexes. Imports of iron ore, for instance, fell from 11 million tons in 1922 to 2.3 million tons in 1923. Statistics of foreign trade in 1923 reflect considerable decreases in the imports of raw rubber,

<sup>17</sup> *Wirtschaft und Statistik*, Vol. 3, Nr. 3, p. 33.

<sup>18</sup> *Materials for a Study of Germany's Economy, Currency and Finance* (Berlin, 1924), p. 26.

<sup>19</sup> Elster, *op. cit.*, p. 714. See also *Wirtschaft und Statistik*, Vol. 4, *passim*.

cotton, wool, copper ore and other raw materials. At the same time the annual imports of coal rose from 12.5 to 25.3 million tons—evidence of the severance of the Ruhr mines from unoccupied Germany.<sup>20</sup> Exportation became increasingly difficult. Many factories were forced to close; others operated only two or three days a week.

Meanwhile, the German government had been trying to make satisfactory arrangements regarding payment of reparations. During the spring and summer of 1923 at least three offers of various amounts were made, to be rejected each time by the French government, which made it clear that France and Belgium were one in their intention to stay in the Ruhr until Germany paid the schedule of reparations fixed in May 1921. Moreover, the French announced that they would not treat with Germany or discuss any conditions until the latter abandoned its policy of passive resistance in the Ruhr.

And the effects of passive resistance proved too costly to the Germans. The failure of German foreign policy and the aggravation of political and economic conditions led to the fall of the Cuno Cabinet on August 12. A new cabinet under Dr. Stresemann supported a policy of currency stabilization, which implied the end of the Reich's financial support of the occupied territories. Obviously the cessation of this support necessitated abandonment

<sup>20</sup> Schultze, *op. cit.*, pp. 194-200.

of passive resistance. On September 26 the Government announced that the policy of resistance had been abandoned.

Since the French had summarily rejected several attempts of the German government to negotiate, it was necessary to permit the industrialists in the occupied regions to attempt a settlement of the economic impasse. A series of agreements between the French authorities and the local business leaders followed. As a result, production in the Ruhr was gradually resumed and tension relaxed.

In the midst of these difficulties, the German currency system was suddenly reformed. A decree establishing the Rentenbank was announced on October 15, 1923. The Reichsbank ceased further discounting of Reich treasury bills and was relieved of the care of the Reich finances. The capital of the new bank, fixed at 3,200,000,000 gold marks, consisted of mortgages upon all German agricultural and industrial property. It was authorized to issue notes that were receivable for governmental dues but not otherwise legal tender. The Rentenbank began to function in November. The Government promptly borrowed 1,200,000,000 Rentenmarks, of which 200,000,000 sufficed to retire discounted Treasury bills, mostly held by the Reichsbank, at the rate of one Rentenmark to one trillion paper marks.<sup>21</sup> The Reichsbank then established, at this ratio, inter-

<sup>21</sup> The mint par of exchange of the Rentenmark and the Reichsmark in United States money is 23.8 cents.

convertibility between paper marks and Rentenmarks. Thus temporary stability of the currency was effected by the introduction of the Rentenbank.<sup>22</sup>

As a publication of the Reichsbank declares, "once the mark was stabilized, Germany soon came to the painful realization that the collapse of the currency had brought about far-reaching and revolutionary changes in her economic system. Large sections of the population had lost their resources, and only a very few had been able to derive any benefit from the inflation. Liquid capital had been practically destroyed. The inflation had put a stop to the formation of new capital and had eliminated the possibility of saving, in the generally accepted sense of the term. The effect was an unwholesome investment in tangible assets of all kinds as well as unwarranted expenditures in useless luxuries. Germany thus emerged from the inflation in a very illiquid condition and practically without any capital in the form of money."<sup>23</sup> The deflation period, as will be shown in the following pages, was characterized by deep depression in many industries and by widespread unemployment.

<sup>22</sup> See H. Schacht, *The Stabilization of the Mark* (Adelphi, 1927), for an interesting account of this reform. See also Viscount D'Abernon, *German Currency: Its Collapse and Recovery, 1920-1926*, *Journal of the Royal Statistical Society*, Vol. 90, 1927; pp. 1-40; Carl Bergmann, *The History of Reparations* (Houghton Mifflin, 1927), pp. 173-216.

<sup>23</sup> Quoted by R. L. Buell, *Europe: A History of Ten Years* (Macmillan, 1929), p. 174.



While these financial reforms were being accomplished, substantial steps were taken in the direction of a readjustment of the reparation plan that would remove the problem of reparations from the field of international politics. During the period of passive resistance the German government had proposed the appointment of an international committee of experts to determine Germany's capacity to pay reparations. The French government at first refused to consider this proposal, but, after pressure from the United States and Great Britain, consented in November 1923. In this manner the Dawes Committee came into being.

Thus, drastic action on the part of the Reich government, together with a late recognition by the Allied powers that the reparation question was primarily economic, not political, in nature, saved Germany from sinking much further into the depths of economic disintegration.

CHAPTER TWO  
REVIEW OF ECONOMIC CONDITIONS,  
1924-1933

A. The Course of the  
Post-Inflation Business Cycles<sup>1</sup>

1. DEPRESSION, HALTING REVIVAL,  
DEFINITE RECOVERY, 1924-1925

The stabilization of German currency tore aside the dense veil of paper marks that had obscured the

<sup>1</sup> Various business journals, monographs and official reports constitute the source for the materials presented in Part A. Particularly suggestive were *Reports of the Agent General for Reparation Payments, 1925-30* (Berlin, 1925-30); James W. Angell, *The Recovery of Germany*; Institut für Konjunkturforschung, *Vierteljahrshefte zur Konjunkturforschung*, Vols. 1-7 (Reimar Hobbing, Berlin, 1926-32); Fritz Naphtali, *Abbau und Aufbau: Rückblick auf das Wirtschaftsjahr 1925* (Frankfurter Societäts-Druckerei, Frankfurt a.M., 1926); Reichskreditgesellschaft, A-G., *Germany's Economic Development*, semi-annual analyses, 1926-32 (Berlin, 1926-32); C. L. Roedler, *Grundzüge der deutschen Konjunkturbewegung, 1920-25* (Frankfurt a.M., 1926); Erich Welter, *Wachstum: Die deutsche Wirtschaft im Jahre 1927*; and *Stockung: Die deutsche Wirtschaft im Jahre 1929* (Frankfurter Societäts-Druckerei, Frankfurt a.M., 1928 and 1930); also *Dreifache Krise. . . .* (Societäts-Verlag, Frankfurt a.M., 1931).

features of German economy. With the return to an effective standard of money measurement, it is possible to see more clearly the variety of factors influencing that economy, no longer dominated by the phenomena of inflation.

*a. Post-stabilization Depression*

The period immediately following the currency reform was characterized by deep depression in most aspects of economic activity. Scarcity of money and credit, lethargy in production and trade, reduction of government and business staffs—reflected in sharp wage conflicts—were tokens of the economic difficulties.

An extraordinary lack of ready money intensified the need for credit. Interest rates were very high. The Reichsbank discount rate, which stood at 10 per cent in January 1924, was far below the market rates.<sup>2</sup> The central bank, therefore, sought to prevent a rush of credit seekers by the introduction of a rationing system.

After the return to the gold basis of reckoning, a decline in commodity prices was apparent. An even greater decline in prices was probably retarded by the slow abandonment of price-calculating methods and risk charges that had been prevalent during the period of inflation. The few available statistics of industrial production in the last months of 1923

<sup>2</sup> The average rate in January for day-to-day money was 87.64 per cent per year.

indicate that it was low. The number of unemployed receiving public assistance—which rose from 139,000 on August 1, 1923 to 1,533,000 on January 1, 1924—convey some impression of the extent of the decline.<sup>3</sup>

With the development of depression an inclination to clear away the debris that had accumulated during the inflation became apparent. Many Government officials and employees were dismissed. At the same time, private business was obliged to resort to wholesale reductions of staff. Everywhere in the clear dawn after the nightmare of inflation there was a calculation of incomes and costs. It was a calculation that generally led first to a scaling-down of costs by means of payroll reductions. Later it was to lead to technical 'rationalization'.

#### *b. Halting Revival*

The depression that began with the stabilization of the mark was pronounced in all aspects of German economy until January 1924. A scarcity of loan capital, declining prices, business inactivity and growing unemployment were its chief features. Symptoms of recovery were apparent from February to May. But there were also definite symptoms of depression during this period—tightness of credit, difficulties in the settlement of accounts, decline of security prices, a great increase in business failures and a general lack of business confidence.

<sup>3</sup> Statistisches Reichsamt, *Wirtschaft und Statistik*, Vol. 4, *passim*.

The relatively generous credit policy of the Reichsbank at this time was probably an important factor in the impulse to recovery. The low discount rate of the central bank ('low' relative to market rates) and its moderate rationing system made for a rapidly broadening flow of credit.<sup>4</sup> No doubt the Reichsbank was desirous of doing all it could to pull business out of the stabilization depression, but in the process it engendered a minor credit inflation. Its account for discounted bills rose from Rm. 39,500,000 on November 15, 1923 to Rm. 1,867,000,000 on April 7, 1924. About Rm. 1,000,000,000 of this increase occurred during February and March. For a moment there was danger of seriously threatening the recently achieved monetary stability. It was decided, on April 7, to hold to a rigorous policy of credit restriction by means of rationing advances. The directory of the Reichsbank ordered that the maximum limit of credit extensions be the amount already extended on April 7.

Indicative of the tightness of credit were the rates for monthly money, which rose rapidly in February and had almost doubled by the beginning of May. During most of this period there was a downward movement in the price level of stocks. The general decline in commodity prices that ceased in February was followed by an upturn lasting until the end of

<sup>4</sup>In the period February-May 1924, the average Reichsbank discount rate was 10 per cent; the average rate for monthly money was 35.3 per cent.

April—that is, until shortly after the restriction of credits by the Reich. Industrial production in general increased during the first months of 1924. There is also sign of more active business in the rising number of freight cars placed at the disposal of shippers and in the figures for Reichsbank clearings. The industries catering to domestic consumption were enlivened by the upswing of business, and, as a consequence, imports of raw materials rose considerably. Exports, however, did not keep pace with imports. Statistics of the labor market give further indication of growing business activity. For the first time since August 1923 a decline in unemployment was apparent. But reviving domestic activity did not mitigate business difficulties; on the contrary, the number of business failures increased steadily.

Thus the business revival during the early part of 1924 was a tempering of the depression that immediately followed currency stabilization. It was probably engendered by an expansion of credit that continued until bridled by the Reichsbank in April. The credit demands of private business were whetted by the discount policy of the central bank. The result was a mild recurrence of inflation—this time in bank credit rather than in paper marks. Brisker demand, especially for consumers' goods, set in. Prices rose, unemployment sank. But the stimulus was brief. Events during the middle of the year showed that it was something of a surface swell

that for a time stimulated the industries catering to domestic consumption.

After the restrictive policy of the Reichsbank had become effective, and the expansion of the purchasing power had ceased, there was little doubt that German economy was still depressed. During the summer of 1924 characteristics of depression were apparent: weakened consumer demand, falling prices, increasing business failures, reduced imports, growing unemployment and curtailed production.

A significant manifestation of depression at this time was an extensive reduction of the business machinery, a general retrenchment, which was particularly marked in banking and commercial organizations. It was reflected in growing numbers of unemployed. Also symptomatic for this period was the relation between the establishment and the liquidation of business enterprises. In the first months of 1924 many new firms were founded, but in the summer there was a large increase in the number of liquidations.

A favorable symptom among many unfavorable ones during the mid-summer of 1924 was a fairly steady drop in money rates. Somewhat easier credit conditions were reflected not only in a decline of interest rates but also in a general tendency to extend credits over longer periods. Easier money rates, together with a supporting action by the larger Berlin banks, made for a slight recovery of the stock market.

### *c. Definite Recovery*

Not until the middle of August, however, were there clear indications of improvement in business conditions. Probably an important influence in the direction of economic recovery was the promulgation of the Dawes Plan although "it simply served to set up the preliminary conditions—removal of the Allied pressure, stabilization of the national finances and currency, and the restoration of general confidence—which were necessary to make recovery possible." <sup>5</sup>

Among the first results of the Plan were the new Reichsbank and currency laws—expressions of the complete adoption of the Reichsmark currency—and the successful flotation of the German External Loan of 1924, amounting to 800 million marks. This loan was of especial importance not only because it was accompanied by a moratorium from reparation payments during the first year of the new Plan but also because it enormously strengthened the confidence of the outside world in the German economy. Foreign capital now began to enter the country in the form of private credits or of direct purchases of interest in German business concerns.

The growing inflow of foreign funds gave considerable relief. It made possible the resumption of projects that had been abandoned because of lack

<sup>5</sup> Angell, *op. cit.*, p. 77. The Dawes Plan was submitted by the First Committee of Experts on April 9, 1924. The Plan was approved by the responsible powers on August 16 and went into effect on September 1, 1924.



of capital; it restored self-confidence to business organizations. Some funds were converted into marks for the purpose of purchasing goods within Germany, thus supporting commodity prices; other credits were at once expressed in increased imports. With the beginning of this period of the placing of foreign loans, the German balance of trade became 'unfavorable', and this condition prevailed until the end of 1925.

During the autumn of 1924 there were reports of contract after contract for loans and for sales of interests in business organizations. In addition, a multitude of unrecorded agreements were concluded and there were considerable sales of securities on the stock exchange to foreign capitalists. Furthermore, the increased discounting of bills of exchange and the acceptance of drafts by bankers in England and the United States added considerably to German borrowings abroad.

According to the Institut für Konjunkturforschung the total of foreign loans extended to Germany by the end of 1924 amounted to approximately 1200 million Reichsmarks. Loans during the first four months of 1925 more than doubled this total. Although short-term<sup>o</sup> foreign loans were discouraged by the Reichsbank and the financial administration, because of the dangers that would attend their sudden withdrawal, a large volume was extended.

<sup>o</sup> Loans whose maturity period is more than one year are called 'long-term'; those of briefer maturity period are known as 'short-term'.

The business credits of the banks of issue—largely those of the Reichsbank—expanded rapidly during the autumn of 1924. Savings bank deposits, almost completely wiped out through the process of inflation, again began to accumulate. Also, as was to be expected from the large inflow of foreign funds, some relief in the money market was evidenced in a reduction of interest rates and in an improvement of credit conditions, particularly in the lengthening of the loan periods. Nevertheless, money rates remained considerably above those in France, England and the United States—testimony to the continuing scarcity of capital in Germany.

The stock exchange had, in general, been depressed since the return to a stable currency. A low price level for stocks reflected high interest rates and unfavorable business reports. A slow advance in the general level of stock prices began in the summer, and continued during the autumn and winter until February 1925. Thereafter the course of prices was generally downward.

Perhaps the most obvious manifestations of revival are indexes representative of industrial production and domestic trade. They show a fairly continuous rise from the summer of 1924 to the end of the spring of 1925. But by the summer of 1925 there were signs of decreasing activity. Increases in the prices of industrial commodities in foreign markets and the relatively stable German industrial price level made for an increase in German exports. However, an

even greater increase in imports augmented the import surplus. Unemployment was much lower in the winter of 1924-25 than in the corresponding season of the previous year.

The process of post-inflation business reorganization manifested itself in continued heavy business mortality. Probably most of the concerns then failing had been founded during the inflation period. Practices that had been attended with success at that time now proved dangerous. Short-time debts incurred during the currency inflation afforded easy means of procuring funds, not only for purposes of working capital but also to expand buildings and equipment. Under later conditions of monetary stability, however, Reichsmark loans were expensive and had to be repaid in full gold value at frequent intervals. It was perhaps inevitable, then, that many business enterprises founded on a minimum of capital must now, at a time of great capital scarcity, become dangerously embarrassed.

There is evidence, then, that by the beginning of 1925 German economy had recovered, relative to the very depressed state of the preceding winter. A glance at the unemployment statistics for the winter of 1924-25 shows that 'recovery' implied by no means anything like a complete absorption of the labor-power of the nation, and bankruptcy figures indicate that the weeding-out process begun in the summer of 1924 was still in full swing.

## 2. RECESSION AND DEPRESSION, 1925-1926

By June 1925 the first outriders of the impending recession had come into view. The collapse of the vast Stinnes concern early in that month dealt a heavy blow to business confidence. To be sure, a large consortium of banks intervened to prevent a panic, but the impulse towards tighter credit conditions and further declines of security prices was given.

The downward tendency of money rates ceased after April 1925. Indeed, rates began to rise, first slightly, then more precipitately in the summer. An increase in unemployment, a down-turn in indexes of industrial production, increases in the amount and number of bills protested, the growing number of business liquidations and bankruptcies, during June, July and August, are indications that the course of German economy had definitely begun to swing downward. During the autumn production continued to decline and unemployment rose rapidly. Prices fell, though only moderately. Foreign borrowings increased considerably, but, since they were largely conversions of short-time advances, they did not stem the recession.

It seems likely that the progressive stagnation of German business during the late spring and summer of 1925 was related to a continuing scarcity of loan capital. Just as revival in the autumn of 1924 and the following winter paralleled widespread

foreign borrowing, so the difficulties that became more and more apparent in mid-1925 were associated with a marked decline in the inflow of foreign funds. Prior to the War German economy was generally in a position to satisfy independently its capital requirements. It was relatively easy to convert short-term advances into long-term obligations by means of stock and bond issues. But in the post-inflation years the ability and willingness of the domestic market to supply capital to industry was much reduced. Thus, when foreign advances declined, or amounted largely to conversions of previous loans, German borrowers were unable to turn to supplies of domestic capital. The issue of stocks in the face of a weakened stock market was difficult, and the demand for bonds was so slight in 1925 as also to make their flotation inadvisable.

Enterprises that needed credit, therefore, had to resort to short-term borrowing. Demands for funds overwhelmed the banks. The desire to preserve liquidity caused them to turn down fresh demands for money, and even to call in older loans, especially smaller advances. Banking policy was rather more lenient with larger debtors than with smaller. A restriction of credit advances to the large organizations would at once have resulted in the abandonment of large projects and the sudden dismissal of many workers. Credit retrenchment, then, was made possible by recalling medium and small loans.

In the autumn of 1925, since it was almost impos-

sible for industrial and commercial organizations to consolidate debts, they had to seek short-term loans from the credit banks. As it became more and more apparent that repayment would be difficult, the banks, afraid of frozen credits, pressed for settlement and restricted further loans. This, of course, made the situation all the more tense.

During the autumn and winter of 1925-26 industrial production—in most branches, at least—fell considerably below the levels it had reached in the earlier part of 1925. Raw materials and semi-manufactured goods constitute roughly half of Germany's total imports, and the greater part of the decline in imports at this time was in this category. It is probable that industrial difficulties were a determining influence towards restricting such imports, inducing manufacturers to rely as much as possible on accumulated stocks and more or less to limit production. Various indexes of domestic trade, too, showed marked declines in the autumn and winter.

One of the most serious aspects of the recession was the great increase in unemployment during the winter of 1925-26. Until October the number of unemployed increased slowly, but thereafter it rose rapidly. A growing number of business failures was another striking reflection of the business decline during the autumn and winter. This was probably part of the process of slow readjustment from conditions of inflation. The sudden recession may have precipitated the eradication of many superfluous

business enterprises.<sup>7</sup> The majority of business organizations failing in this period were engaged in trading rather than in manufacturing; this indicates the extent to which the inflation had stimulated uneconomic distribution of goods. It is difficult, however, to estimate the gravity of the effects upon German economy of these many failures because the size of the liabilities was not reported.

The recession, as reflected in unemployment, commercial failures, curtailed industrial production, inactivity on the security markets and reduced volume of domestic trade, probably reached its nadir in January and February 1926. But at that very time signs of easier credit conditions became apparent. The first impulse in this direction would seem to have come from inflowing long-term loans, mostly from the United States. They allowed funding of debts and considerably lightened the burden of the banks. As hand in hand with this capital inflow the rates for short-term loans declined, the inclination to purchase long-time paper awakened among investors. A remarkably strong demand for mortgage

<sup>7</sup> From 1914 to 1923, comprising the whole period of the war and the inflation, about 10,000 new stock companies and about 45,000 limited liability companies had been added to the number previously existing, and this growth became accelerated toward the end of the period, under the unhealthy stimulus of inflation. It was only natural that the principal part of the failures should be among these newer concerns; during the first ten months of 1925 two-thirds of the failures were of concerns founded since 1919, and in the five succeeding months, which comprised the most acute period of the crisis, 58 per cent were of such concerns." *Report of the Agent General for Reparation Payments*, June 15, 1926, p. 45.

bonds developed. Share prices fell throughout the second half of 1925, but after the beginning of 1926 recovery was surprisingly quick, owing partly, perhaps, to increased purchases of stocks by foreigners.

The extreme form that the recession took—widespread business failures and record unemployment—was a manifestation of industrial reorganization that became especially apparent at a time of economic decline.<sup>8</sup> The recession was not the reflection of difficulties in banking; rather, it was expressed in the withdrawal of credit from unprofitable concerns, many of which had been unable to change practices instituted during the inflation and were still relying, for working capital, upon short-term loans. Other concerns, representing the great majority of German business organizations, proceeded to effect a sweeping reorganization that was not limited to improving internal methods of administration and production, but in the case of many of the largest industries amounted to rebuilding the business plant itself.<sup>9</sup> Thus, burdens remaining from

<sup>8</sup> That the extent of business failures and unemployment was greater than the decline in production is apparent in many economic reports of the time. Of course, production did decline considerably, but not in the same proportion as the number of employed workers. For example, production of coal was only 5 per cent less in January 1926 than in January 1925, but the number of workers was reduced 15 per cent. Here is an indication of drastic reorganization, which in this case meant the closing of inefficient mines. Similar reorganization was taking place in other industries. The great unemployment and heavy business mortality, therefore, must be looked upon not only as a reflection of recession but also as an ugly aspect of 'rationalization'. (Frankfurter Zeitung, *Wirtschaftskurve*, 1926, I, pp. 4, 5.)

<sup>9</sup> The activities of two giant enterprises—the Interessengemeinschaft



the inflation were removed. Unfruitful users of short-time credit retired from the market, while in other quarters perfected administration admitted the accumulation of funds for the repayment of debt and the increase of working capital. As progress was made in these directions, the volume of available funds increased and the cost of credit to sound borrowers declined.

The recognition of the mistaken policies of ten years, of the superfluity of business organizations, of contradictory industrial plans, led to an eager will to recast thoroughly the German productive machinery. This was the period when the shibboleth 'Rationalisierung' was shouted from every hill-top. American methods of production, 'Fordism', 'rationalization'—these were the topics of the day.

### 3. RECOVERY AND PROSPERITY, 1926–1928

#### *a. Business Consolidation During Depression*

The spring of 1926 was a period of reorganization and realignment during depression. The ranks of the unemployed were still swollen but production was increasing. The growing number of railway cars placed at the disposal of shippers, and especially the decline in business failures and protests of bills

für Farbenindustrie and the Vereinigte Stahlwerke—at this time were characteristic of the process that was so general. Both organizations concentrated their productive plants in the most suitable localities; both introduced sweeping technical improvements; at the same time, agreements were concluded with foreign producers (*Ibid.*, June 1926, p. 119).

of exchange indicated that, so far as business activity was concerned, the low point had been passed.

Seasonal factors strengthened the tendency towards recovery. However, the stocks of goods that had accumulated during the recession were diminishing and production was stimulated to an activity that was more than seasonal. An export surplus continued until June, and this, too, helped to reduce the stock of domestic goods. Thus German economy independently worked itself free from its previous unliquid condition.

Although internal factors were probably responsible in large measure for the revival of German production, various influences that had their origins abroad were of great importance in maintaining and strengthening it. One such factor was the (protracted English coal strike.) The German coal industry, of course, was the first to profit by the decline in England's coal production. Before long, however, the iron industry, too, found itself called to fill increasing foreign orders.

Moreover, the stabilization of the French currency late in 1926 may have been favorable to the recovery of Germany's foreign trade. In 1924 and 1925 German exporters had been subject to the competition of exports in countries with inflated currencies. To estimate the full implications of such competition is difficult, but during periods when declines in currency exchanges had outrun price adjustments in the countries of inflation, it was

probably severe. Competition of this sort had largely ceased by the end of 1926.

Furthermore, the relative liquidity of the money market and the concomitant rising activity in the stock market during the spring of 1926—one of the earliest indications of returning business optimism—were probably related to an increased inflow of foreign capital.

Easier credit conditions now enabled many business organizations to repay part of their short-term debts, or to convert them into longer-term obligations, to a large extent by foreign borrowing. In the money markets the growing liquidity was reflected in an expansion of the volume of funds offered for short-term investment. Short-term money rates declined rapidly during the early part of 1926, reaching a level of relative equilibrium in April. The economic organization also showed itself able to absorb large volumes of new long-term issues, and the rates on such issues tended to decline. Nevertheless, the long-term market generally continued to be ruled by relatively high rates. The large amounts of government loans that were offered probably restricted the supplies of long-term funds available for industrial and commercial purposes and so tended to keep rates high.

As noted above, a continuing inflow of long-term foreign credits undoubtedly played an important part in influencing the return of easier credit conditions. Probably large amounts of capital funds were

accumulated by business enterprises but their amount is difficult to estimate. Savings bank deposits, issues of bonds and stock shares, life insurance premium payments, however, indicated that there were considerable accretions of domestic capital.

The Reichsbank found in December 1925 that the practice of rationing credit—instituted as an emergency measure in April 1925—was no longer necessary. Early in January it was abandoned. Thereafter, the central bank, aside from its usual discrimination in the purchase of eligible bills, attempted to limit the use of its credit by relying exclusively upon the bank rate.

Thus, diminishing domestic stocks of goods, various stimuli to exports and relatively liquid credit conditions provided the support for a general revival of German economy in the spring of 1926. Unusual supplies of credit at relatively low rates, together with confidence in industrial earning capacity—provided by progress in industrial reorganization—soon carried stock prices to points above those reached at the peak of the upswing in 1925. Various indexes of domestic trade—such as freight car loadings, Reichsbank clearings, postal check traffic—bear witness to the accelerating recovery during 1926.

As indicated above, acute manifestations of the depression of the winter of 1925-26 had been the rapid rise in unemployment and the great number of business failures. Although the latter declined rapidly during the spring of 1926, unemployment

remained high throughout the year. The closing of many business enterprises had much to do with accelerating the rise of unemployment during the recession and probably accounted for much of it even in the summer of 1926. But a more continuous factor was the radical reconstruction that German industry and commerce were undergoing in the interests of economy. (Unemployment in this sense is to be regarded less as an inheritance from the depression than as an aspect of the structural readjustment of the entire business system.)

#### *b. Expansion*

By the end of the winter 1926-27 the British coal strike had ended and the inflow of foreign capital had slowed down. Nevertheless, German economy continued to expand at an accelerating tempo. Sales on both the security and the commodity markets were increasing. Production in the coal, iron and manufacturing industries, particularly in those making consumption goods, rose substantially. Indeed, it may be said that every branch of industry took part in the revival. The recovery seems to have been quite as uniform in domestic business activity. Increased domestic business made for a large volume of imports, and the import balance grew. Furthermore, it was reflected in fuller employment of labor and in increasing financial security of industrial and commercial enterprises. Thus during 1927 recovery broadened into a period of prosperity that continued

without serious interruption until the middle of 1928. German commerce and industry were more active than at any time since the War.

As noted above, credit expansion, based upon Reichsbank extensions and upon foreign loans, stimulated the process of expansion. However, reviving economic activity made for rapidly increasing demands for credit, money rates advanced, and by the middle of 1927 increasing tension in credit conditions became apparent.

The level of stock prices had been rising rapidly and with little interruption since the beginning of 1926. This was in part related to growing confidence in the earning capacity of German industry, but it was felt by the Reichsbank authorities to be even more a reflection of easy money conditions that gave support to speculators. The rise in stock prices was considered to be disadvantageous to German economy for it was believed that high stock prices must bring in large amounts of foreign funds, which would be withdrawn again shortly with speculative profits, and would lead to loss on the part of the German credit structure. Finally, in May 1927, by initiating an agreement among the leading private banks to curtail drastically stock exchange credits, the Reichsbank took steps to curb speculation. Announcement of this agreement precipitated a sudden and rapid fall in stock prices.

The Reichsbank had been out of technical contact with the money markets during most of 1926

and was obliged to exercise its influence by means other than the discount rate and credit control. In the early part of 1927 it took steps to regain the control of credit. For this purpose, it attempted to limit the offers of foreign credit and the public funds, both of which had been important factors in rendering the bank rate inoperative. This policy for a time proved effective. During the first half of 1927 the volume of long-term loans from abroad was drastically reduced. Short credits, however, continued to flow into Germany in considerable volume. On the other hand, a counterflow of German credits to foreign countries revealed a revival of German capacity to invest in foreign countries. Idle government funds, which at times had been a disturbing influence in the money markets, were much diminished in 1927. As the banks of issue, of which the Reichsbank is of chief importance, continued to expand their business credits, the stimulus initiated by foreign funds was retained by means of domestic credit expansion. Thus for a time the Reichsbank policy had a measure of success. But the power of the domestic market to meet the capital needs of German economy proved inadequate, and by late spring 1927 a revival of foreign borrowing was evident. Interest rates advanced, and the central bank was forced to raise its discount rate. The demands for loan funds were very heavy, not only on the part of industrial and commercial enterprises, but also from agriculture, which, because of two years of short

crops, was in considerable credit difficulties. Further, large borrowing operations by the public authorities added to the tension on the capital markets. Foreign long-term loans continued to be placed in large volume. Short-term borrowing, too, was considerable. Nevertheless, the tension in the credit markets did not relax. The brief period of credit liquidity and of a slackened inflow of foreign funds had ended.

Despite large imports of foreign capital and the implied confidence in German economy, despite the growth of domestic capital supplies, interest rates remained high. The urgency of Germany's needs for capital led to demands that could not be satisfied except at high rates of interest. An insufficient supply of capital hampered the German economy throughout the years here considered. Capital scarcity was an ominous under-current over whose surface the industrial and commercial activities of the nation rose and fell.

#### 4. RECESSION AND DEPRESSION, 1928-1932

##### *a. Slow Decline*

Consideration of the credit situation and the declining volume of production, together with the continued high level of trade and consumption, leads to the conclusion that by the middle of 1928 German economy had entered a fairly late phase in the process of expansion. Substantial capital ex-



penditures in industry and housing accommodation were paralleled by a growing stringency of capital supplies. In view of the tightening of the money markets abroad there was little prospect of easier credit conditions. German economic activity, so closely dependent upon the international credit situation, was beginning to slacken. The stock market was inactive, the import balance had begun to decline, and industrial production, although large, tended to diminish. Costs of production, however, were rising, and commodity prices at wholesale continued to advance.

Definite evidence of retardation in the rate of expansion, and even of absolute decline in activity, is afforded by various production series. During the spring output in the iron and steel industries declined considerably and would have fallen more but for sustained exports. However, the volume of domestic trade continued on the whole to run higher than in 1927. There was thus a contrast, in the first half of 1928, between a large volume of trade and a moderate decline in the volume of production.

Unemployment in the winter of 1927-28 had been much less severe than in the preceding two winters. But the seasonal decline during the spring and summer of 1928 was not so pronounced as in 1927. The number of business failures, too, showed a rise over the levels of the preceding year.

During the autumn of 1928 and the winter of 1928-29 further indications of a decline in German

business activity were evident. Factors of an extraordinary nature were involved. A labor dispute in the Rhenish-Westphalian steel and iron plants led to a lockout in November and the first few days of December that reduced their output suddenly and to a very large extent. The effects of the lockout, of course, extended into branches of production and trade related to the iron industry. With the resumption of work in the mills a pronounced increase in production took place. This must be considered, at least in large part, as compensation for the drop in production during November.

Production and distribution were further affected by an unprecedentedly severe winter. The average temperature in February was the lowest since the inauguration of weather records in Berlin early in the eighteenth century. A great amount of outdoor work had to be abandoned during the long period of extraordinary cold from December to March, and much indoor work dependent upon uninterrupted material supplies and regular distribution was also disturbed.

(Germany's position as a heavy borrower of foreign capital made its economy sensitive to changes in the international money markets which were especially marked in the twelve months after the middle of 1928.) Several factors tended to reduce the volume of German borrowings from abroad, and, for a time in the spring of 1929, even led to heavy net withdrawals of foreign funds. Chief among these

factors were the extraordinary speculative activity in New York, which until the autumn of 1929 attracted money from all parts of the world and tended to tighten the market for long-term investments; in addition, the uncertainty of the protracted negotiations on reparation payments tended to discourage long-term loans. The United States, which had provided most of the long-term funds invested in Germany and a large share of the short-term loans, now changed its position from lender to borrower in the international markets. The withdrawals of American funds in Germany during the autumn of 1928 were offset by new loans from various European countries. In the late winter of 1928-29 and in the spring of 1929, however, there was a net outflow of foreign funds from Germany, accompanied by a transfer of domestic funds abroad. In May it finally became evident that an agreement on reparations was about to be reached, and considerable money returned from abroad; this more than made up for the previous outflow. Nevertheless, it seems probable that uncertainties involved in the reparation meetings had been sufficiently strong to restrain German business enterprises effectively.

The tightening credit situation reflected itself in the security markets. After the beginning of 1929 stock prices weakened considerably and a fairly continuous decline set in.

As was noted above, industrial production was declining towards the end of 1928; in the winter of

1928-29 it fell to low levels. However, an increase occurred during the late spring and summer of 1929. Manufactures for export were greatly stimulated by favorable conditions in world trade. Furthermore, the extraordinarily long and severe winter had tended to postpone capital expenditures so that building construction practically did not begin until late spring. Subsequently, however, nearly all branches of industry experienced a heavy reduction in unfilled orders, bringing about a severe decline in industrial activity.

Figures relating to domestic trade show fluctuations very similar to those in indexes of industrial production. Large declines during the winter were followed by increases in the second quarter of 1929 that reflected a larger volume of trade than at the same time in 1928. This activity, too, was doubtless in large measure a compensation for the winter shrinkage. The volume of imports declined after the second quarter of 1928, but exports, particularly of finished goods, rose. Domestic demand was falling off, but the expansion of sales abroad retarded the effects on production.

Unemployment, as might be expected, was very great during the severe winter of 1928-29. It declined with the return of warmer weather, but in the autumn again rose rapidly. Business difficulties also were becoming more apparent, as reflected in the number of business failures and in the nominal amounts of bills protested.

Recession was not unmistakably apparent until the summer of 1929. After then, however, there was no doubt that activity was gradually declining and that the probability of depression in the near future was strong. To be sure, the intense strain in the money markets disappeared for a time in the autumn of 1929 and the spring of 1930. This was primarily the result of a decline in capital expenditures and a lessened demand for capital, which in turn proceeded from curtailed production, particularly of building and other forms of construction, declines in domestic trade, and a rising export balance of trade, together with a resumption of capital imports. In 1930, the general decline was accelerated. Doubt and hesitation had been introduced into German business enterprise by the events accompanying the efforts of the 'Experts' Committee' in Paris to effect further settlement of the reparation problem. Disorder in the public finances continued to be a serious factor of disturbance—particularly with respect to the cost of credit. Now, the decline in business activity in numerous other countries, reflecting itself conspicuously in a general fall of commodity prices, was a further element making for recession in Germany. During 1930 and 1931 prices of securities and commodities declined almost without interruption, industrial production and domestic trade fell off, imports were reduced and unemployment rose. Exports continued fairly high (although they

too were falling), tending to retard the downward movement.

*b. Deepening Depression*

Thus in the middle of 1930 Germany was in a deep depression, a situation similar to that in other industrial countries. But Germany was peculiarly sensitive to disturbances at home and abroad, especially because of its vast short-term indebtedness. As was indicated above, credit conditions became somewhat easier during the first half of 1930, and foreign funds were again available in considerable volume. But revelation of the strength of the extreme political parties in the Reichstag election in September 1930 led to sudden distrust of Germany's economic stability. For some weeks thereafter the outflow of foreign capital was heavy. Although by the end of the year funds were returning, foreign creditors remained alert and apprehensive.

In the late spring of 1931 a series of economic and political disturbances, issuing immediately out of the failure of the Austrian Creditanstalt, impinged upon German economy and gave the impulse for renewed exports of loan funds. By mid-summer the outward flow of capital had taken on the aspect of a panic, and the financial structure of Germany was threatened with collapse. Approximately 2.9 milliard Reichsmarks of short-term credits were withdrawn in the first seven months of 1931, largely in June

and July.<sup>10</sup> The summer witnessed several bankruptcies involving leading commercial organizations and insolvency on the part of several large banks. The panic reached its climax in July and August, when the banks were temporarily closed. The stock exchanges were closed for the remainder of the year. Extraordinary measures of exchange and credit control by the Reichsbank and the Government, a moratorium of political debts and conclusion by leading creditors of a 'Standstill Agreement', intended to retain foreign funds subject to partial repayment from time to time, were attempted to relieve the highly critical tension. However, funds continued to flow out. It is estimated that about one milliard Reichsmarks of short-term foreign debts were repaid between July and November.<sup>11</sup> The reserve and credit position of the Reichsbank was strained to the utmost by the withdrawals of credits from abroad. Government support was extended to the banks. By a series of 'emergency decrees' the Government was able to exercise considerable control over private enterprise in general.

The decline in industrial production seemed to be slackening somewhat during the spring of 1931. But the capital withdrawals and the credit panic during the summer led to renewed and sharp reduction. Output in all industries declined progressively throughout the remainder of the year and well into

<sup>10</sup> Report of the Special Advisory Committee, etc., *Economist*, January 2, 1932.

<sup>11</sup> *Frankfurter Zeitung*, November 1, 1931, p. 5.

the spring of 1932. However, output of consumption goods fell off somewhat less than that of production goods.<sup>12</sup> The labor market was further seriously undermined from the summer of 1931 to the summer of 1932. Reduced industrial production, of both cyclical and seasonal nature, led to record unemployment of approximately 6,200,000 workers by March 1932.<sup>13</sup> The income of the working population was further drastically reduced, not only because of growing unemployment, but also because of a larger proportion of part-time work and lowered wage rates.

Problems of government finance became more serious as the general decline continued. More and more the Reich, state and local governments were forced to attempt to reduce expenditures and to find new sources of revenue. But their efforts were hampered increasingly by the demands for social relief and the lowered national income. Thus the burden of government on the economy became heavier during the course of the depression.

Reduced income and the gradual depletion of reserves of purchasing power (which hitherto had helped to lighten the burdens of depression) were reflected in declining domestic trade and consumption. It is likely that the quality, as well as the quan-

<sup>12</sup> By mid-summer, 1932, the output of production goods had fallen to 50 per cent of the 1928 average, whereas the output of consumption goods was maintained at about 75 per cent of that average.

<sup>13</sup> In this period, too, 'invisible' unemployment was much increased; see Ch. II, footnote 5a.



tity, of goods consumed was lowered. Commodity prices declined further, until by the middle of 1932 the general price index was about 5 per cent below the level of 1913. Foreign trade, too, was diminished in value. Imports, reflecting the reduced industrial output, tended to decline throughout the year after the summer of 1931. Exports rose for a time in the autumn of 1931, particularly in response to large orders from Russia, but thereafter fell steadily and rapidly. Increasing hindrances to foreign trade and the competition of countries with depreciated currencies seem to have hastened this decline.

The pressure on the German credit structure remained heavy during the autumn of 1931 and the subsequent winter. Faced with declining deposits, the commercial and savings banks found impossible any corresponding reduction of outstanding credits. The demands made on them could be met only by continued large discounts of bills with the Reichsbank. Consequently the credit of the Reichsbank expanded markedly at the same time that its reserves of gold and exchange were reduced. The decline of the surplus of exports over imports necessitated the continuance of rigid control over foreign exchange and further agreements with Germany's creditors leading to reduction of interest rates and conversion of short-term advances into long-term credits. However, during the early months of 1932 a decline in the volume of commercial bills drawn and in the banks' demands on the Reichsbank, a retardation of

the decline in savings bank deposits, and the resumption of official trading on the German security markets, indicated that the strain associated with the credit panic had relaxed.

#### 5. HESITANT REVIVAL, 1932-1933

The long depression seems to have reached its nadir about the middle of 1932. Thereafter a restoration of business confidence was increasingly evident. Chief among the factors making for revival was a resumption of production that compensated for the extraordinary declines of 1931 and early 1932. Industrial output was so much contracted after the credit crisis that it was insufficient to meet current consumer demands and the needs of maintaining industrial equipment. Thus, at least a measure of revival was necessary to increase nearly exhausted stocks of retailers, jobbers and manufacturers, and to make industrial repairs and replacements. Moreover, as the necessity to liquidate old commodity stocks disappeared, the downward pressure on the price system relaxed. The steadying of prices in itself was a stimulus to renewed activity in industry and trade. Furthermore, the Lausanne agreement (June 16, 1932) to suspend reparation payments and the strenuously renewed efforts of the Reich government to expand production and employment led to an improvement of business sentiment.

Production in many lines of industry became increasingly active during the autumn; in others, the decline in output was checked. The general index of industrial production rose by nearly 10 per cent in the three months, August to November. Improvement was most marked in the building, coal, iron and consumption goods industries. Increased production led to an expansion of employment. The various indexes of industrial employment show considerable rises from August to November, in contrast to declines during the corresponding periods of 1930 and 1931. Domestic trade was enlivened, too, though more as a result of restocking by distributors than because of increased consumption. Measures of consumption, indeed, indicate continued decline during the second half of 1932. Commodity prices generally fell less rapidly, and there were pronounced rises in many raw materials prices. In consequence of steadier prices and increased industrial activity, imports of raw materials and semi-finished goods rose. Exports also showed a revival in the autumn, but this was largely a seasonal movement.

The provisional consolidation of Germany's short-term foreign indebtedness, together with the virtual cancellation of reparations, contributed to greater liquidity in the money markets. During the autumn interest rates declined, the pressure of banks on their debtors was reduced, and the prospects for converting short-term credits into long-term loans improved. The prices of stocks, reflecting the easier

credit conditions and the industrial revival, continued to rise gradually. Signs of growing business security were manifest in the declining numbers of bankruptcies, receiverships and bill protests. Nevertheless, new long-term credits remained difficult to obtain except at costs that made their profitable use seem very doubtful.

Seasonal influences during the winter of 1932-33 interrupted the rise in industrial output, employment and trade, but in the early spring of 1933 the general advance was resumed. Prices of raw materials and finished goods became firmer, and this tended to make more satisfactory the relationship between industrial costs and income. But difficulties that had become increasingly apparent during the course of the depression hindered the progress of revival. Despite the easing of the money markets, the supplies of long-term credits for industrial expansion remained meager. Domestic banks and business enterprises and foreign lenders were primarily interested in the continuing liquidation of debts. The presence of a large reserve of domestic consumer purchasing power might have acted as a support and stimulus for industrial activity, once prices were steady. However, the long depression had greatly reduced both the incomes and the savings of individuals and business enterprises. The downward pressure on wages continued into 1933, and such business profits as accrued were applied to a considerable extent to the reduction of liabilities. Also, the grow-

ing resistance of world markets to German goods made improbable a stimulus from export trade. Although construction costs were at a low point, the meager purchasing power in domestic and foreign markets, together with the large surplus productive capacity of many industries, threatened that returns on new investments would be inadequate. There was, then, little incentive to make extensive additions to the existing plant.

Thus, the growing necessity of replacing capital goods and durable consumption goods, the depletion of commodity surpluses, the gradual increase of credit liquidity together with more and more vigorous support of the economy by an aggressive, firmly entrenched government, provided the chief impulses in the direction of revival. But the continuance of economic distress among the masses of urban and agricultural consumers, the declining export surplus, the uncertainties involved in obtaining and applying new capital investments, made the progress of the upswing slow and uncertain.

## 6. SUMMARY <sup>14</sup>

The months immediately subsequent to currency stabilization were characterized, in general, by depression. In the last quarter of 1923, this was espe-

<sup>14</sup> Twenty-four series pertaining to various aspects of German economy are presented in Chart 1. This chart may be helpful in illuminating the course of the economy from 1924 to 1933.

cially evident in large unemployment. The short period of credit expansion and increased business activity—February to April, 1924—which followed is probably to be attributed in large part to Reichsbank policy. However, when the new currency seemed endangered, credit was sharply curtailed. The underlying depressed situation again became apparent in greater unemployment and a heavy toll of bankruptcies. After August there was considerable improvement, accompanying the large borrowing of foreign funds that followed the acceptance of the Dawes Plan. During the autumn and winter of 1924 increasing activity was evident in indexes of industrial production, trade and employment. But the number of insolvencies remained high—a manifestation of structural reorganization in German economy. After the beginning of 1925 the inflow of foreign loans diminished markedly. This may account for the unclear picture of business during the early months of that year. Production and consumption continued to rise for a time, but by the end of spring symptoms of recession were apparent.

The cyclical upswing definitely came to an end in the summer of 1925. The sharp recession in the autumn of that year was characterized particularly by accelerating increases in unemployment, business failures and liquidation. Industrial production and commercial activity reflected their decline in most economic series. The essential difficulties were apparently in business organization rather than in

finance. Indeed, credit was withdrawn from unprofitable concerns, but it did not become suddenly and universally unobtainable. More significant factors involved in the recession were those associated with practices of administration and forms of organization that had developed during the War and the inflation and could not survive under conditions of currency stability. Also, German industry had not yet had the opportunity to adapt itself to more advanced methods of production. Administrative and technical reforms were necessary in order to restore the world competitive strength of the German economy.

The depression that characterized the winter of 1925-26 did not last long, reaching its turning-point early in 1926. Easier domestic credit conditions, improving business organization and industrial technique, together with external stimuli—chiefly the continuing inflow of foreign capital and the severe British coal strike—made for gradual but definite recovery of German business during the late spring and summer. Unemployment was one of the few economic series that failed to show very considerable improvement by the autumn of 1926. However, heavy unemployment and the numerous business failures must be viewed as aspects of structural reorganization.

Recovery broadened into a period of prosperity during 1927 which continued until the spring of 1928. Business activity was widely extended and its

manifestations in production, consumption and employment were fairly uniform. However, substantial capital expenditures were paralleled by a growing stringency of capital supplies. By the end of spring, 1928, it was apparent that the intensive activity was giving way to decline. To be sure, consumption and trade were still at high levels and the labor market was in a relatively satisfactory condition. But money rates were rising, the physical volume of production in certain industries was declining and there were indications of increasing business difficulties. The period of general economic advance—which, with qualifications, may be regarded as a time of prosperity—now gave way to slow recession.

The autumn of 1928 was marked by a downward trend of business as a whole, a relatively stable volume of consumption, a slowing down of capital expenditures and an expansion of exports. The lockout in the Rhenish-Westphalian steel and iron industry in November 1928 accelerated the seasonal rise in unemployment and reduced the activity of other industries. In the early months of 1929 the effects of the lockout were aggravated by weather of unprecedented severity. The decline of industrial production during the winter was counterbalanced by increased activity during the spring and summer of 1929. However, other factors, particularly those connected with credit, continued to exercise a restraining influence. Credit stringency was aggravated by protracted reparation negotiations, by extraordi-



nary demands for capital in other countries, by the unsatisfactory financial showing of many public bodies. Decline deepened into depression during the winter. Throughout 1930 industrial production and commercial activity continued to contract, unemployment rose, and commodity imports and prices fell to low levels. In the autumn, after the growing strength of the extreme political parties had become apparent, there was a heavy outflow of foreign capital, but by the end of the year funds were returning. A series of political and economic disturbances during the spring and summer of 1931 gave the impulse for a renewed outflow of loan funds, which in the middle of the summer took on the aspect of a panic. Unusual measures of Government control were required to prevent financial collapse. The decline in general economic activity, as reflected in numerous indexes of production, trade and prices, was accelerated by the credit panic. The winter of 1931-32 and the following spring found German economy in deep depression. During the summer and autumn of 1932 depression gave way to a hesitant revival. Production, employment and trade rose, prices were strengthened, and the money markets recovered from their paralysis. The growing necessity of filling depleted commodity stocks and restoring outworn capital and consumers' goods, together with the gradual liquidation of the debt burden, seem to have been the main reviving factors. Although their influence extended into 1933, recovery was slow and

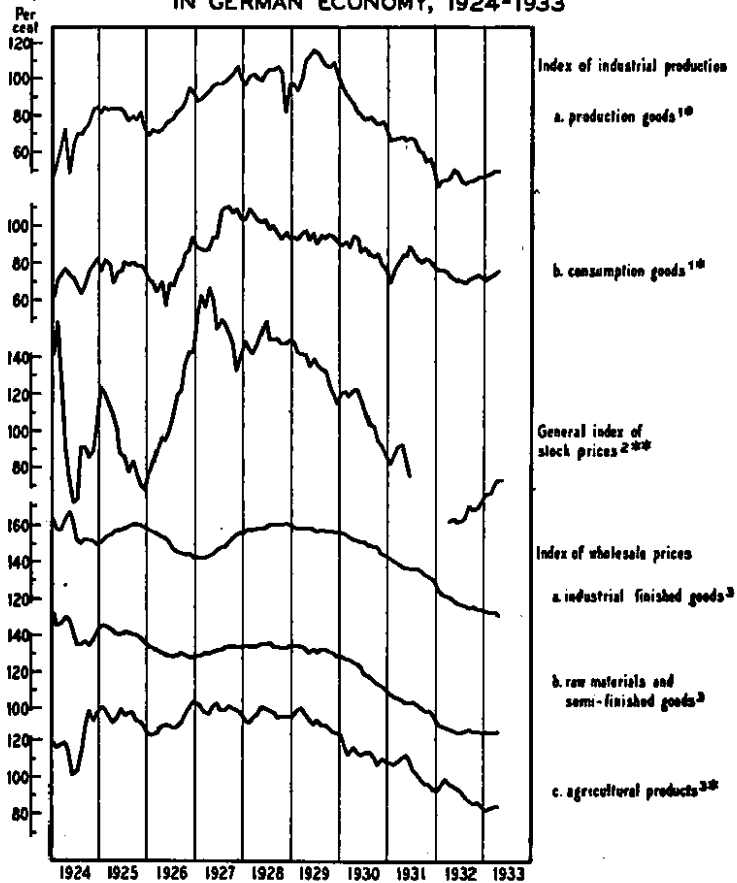
uncertain. The economy continued to labor under powerful depressive burdens proceeding chiefly from the narrowness of both domestic and foreign capital and commodity markets.

### B. Significant Aspects of German Economy, 1924-1933

The foregoing attempt to describe the totality of the cyclical course of German economy from early 1924 to the spring of 1933 indicates that the fluctuations of an economy are the expression of a complex of changes in a great variety of processes and that each of these processes is itself a complex of variables. Limitations of space and time, however, demand that the study confine itself to what are considered to be essential features of the ebb and flow of the economy.

This section is a summary reconsideration of aspects of German economy that appear to be closely connected with the character of its cyclical fluctuations. They have already been emphasized, but hitherto the discussion has been built around the framework provided by the successive phases of the business cycles—recovery, prosperity, recession, depression. It is believed that a review of some of these aspects—one by one, rather than chronologically—may further illuminate the nature of the cyclical fluctuations in the post-stabilization period.

**CHART 1**  
**TIME SERIES ILLUSTRATIVE OF CYCLICAL FLUCTUATIONS**  
**IN GERMAN ECONOMY, 1924-1933**



\* Seasonal fluctuations removed

\*\* July 1931 - March 1932, inclusive, not available

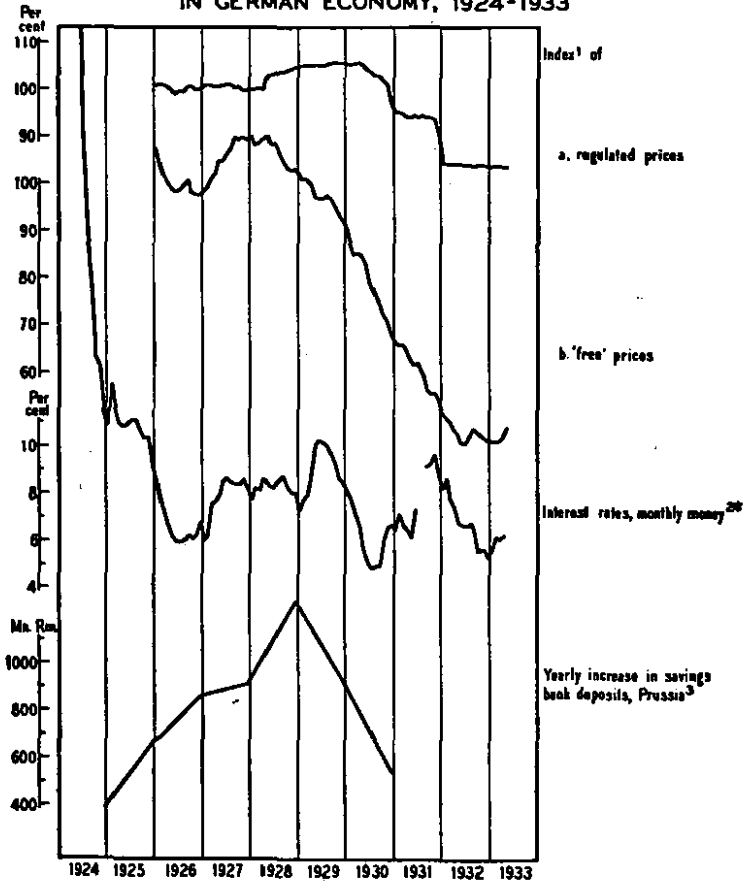
<sup>1</sup> 1928 = 100

<sup>2</sup> 1924 - 1926 = 100

<sup>3</sup> 1913 = 100

### CHART I (CONT.)

#### TIME SERIES ILLUSTRATIVE OF CYCLICAL FLUCTUATIONS IN GERMAN ECONOMY, 1924-1933



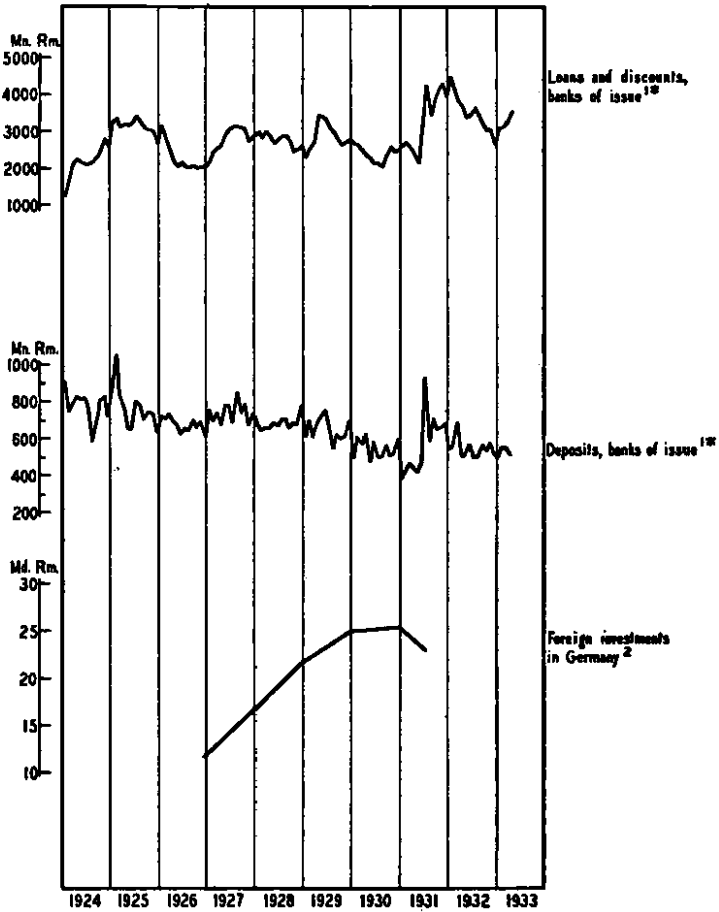
\* Seasonal fluctuations removed

<sup>1</sup> 1926 = 100

<sup>2</sup> Per cent per year (not quoted in July and August, 1931)

<sup>3</sup> Yearly total in millions of Reichsmarks. (Decrease in 1931 of 909.6 million Rm., and in 1932 of 409.2 million Rm.)

**CHART 1 (CONT.)**  
**TIME SERIES ILLUSTRATIVE OF CYCLICAL FLUCTUATIONS**  
**IN GERMAN ECONOMY, 1924-1933**

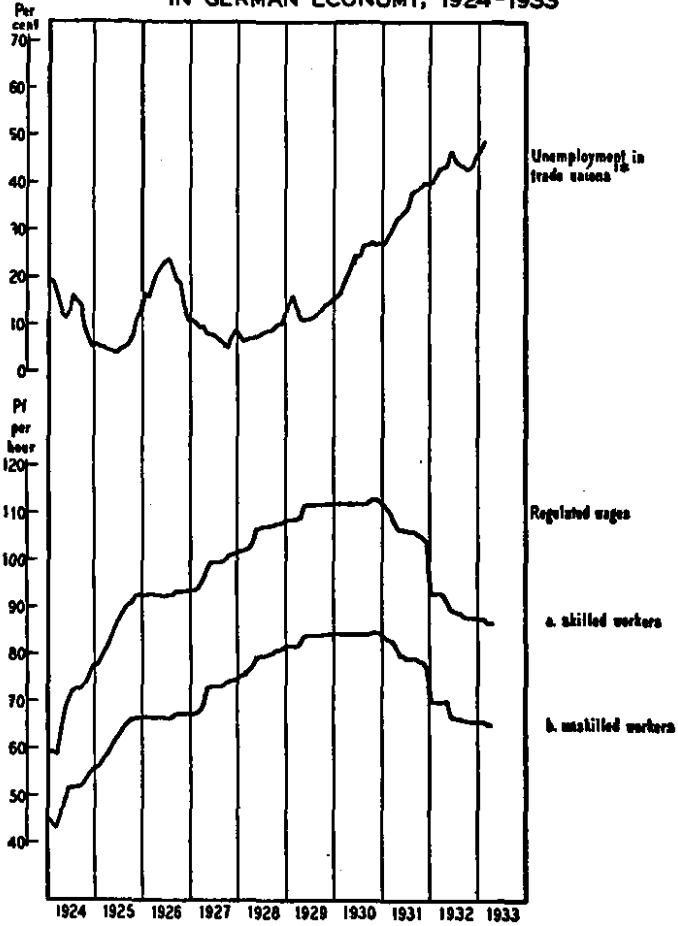


\* Seasonal fluctuations removed

<sup>1</sup> Total at end of month in millions of Reichmarks

<sup>2</sup> Total at end of year in milliards of Reichmarks

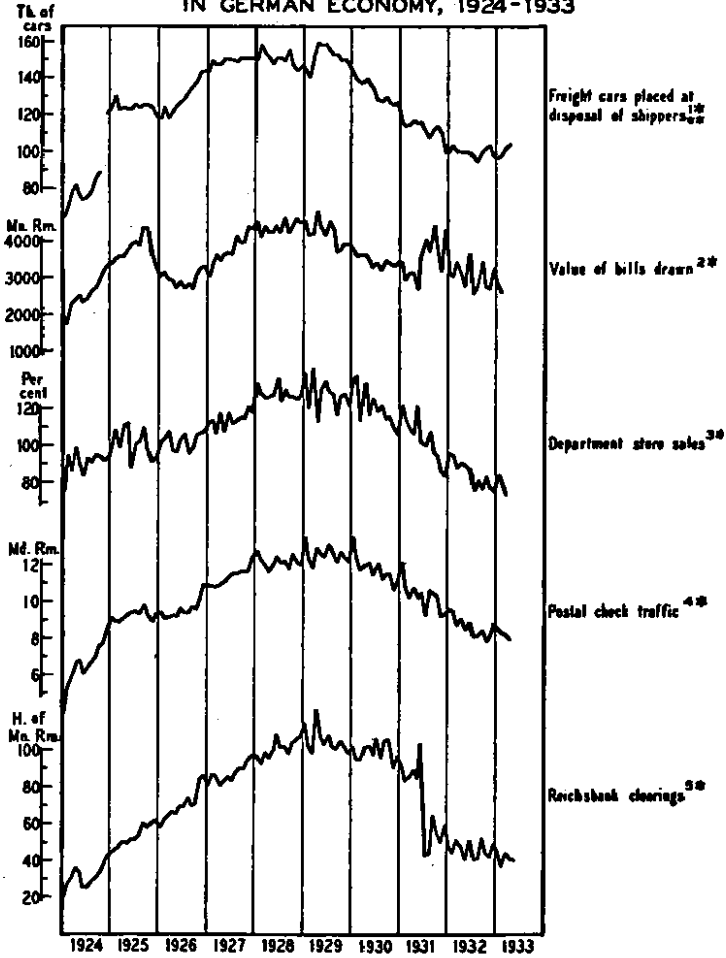
**CHART 1 (CONT.)**  
**TIME SERIES ILLUSTRATIVE OF CYCLICAL FLUCTUATIONS**  
**IN GERMAN ECONOMY, 1924-1933**



<sup>2</sup> Seasonal fluctuations removed

<sup>1</sup> Per cent of membership

**CHART 1 (CONT.)**  
**TIME SERIES ILLUSTRATIVE OF CYCLICAL FLUCTUATIONS**  
**IN GERMAN ECONOMY, 1924-1933**



<sup>1</sup> Seasonal fluctuations removed

<sup>2</sup> November 1924 data not available

<sup>3</sup> Daily average per month in 1000 cars

<sup>4</sup> Monthly total in millions of Reichsmarks

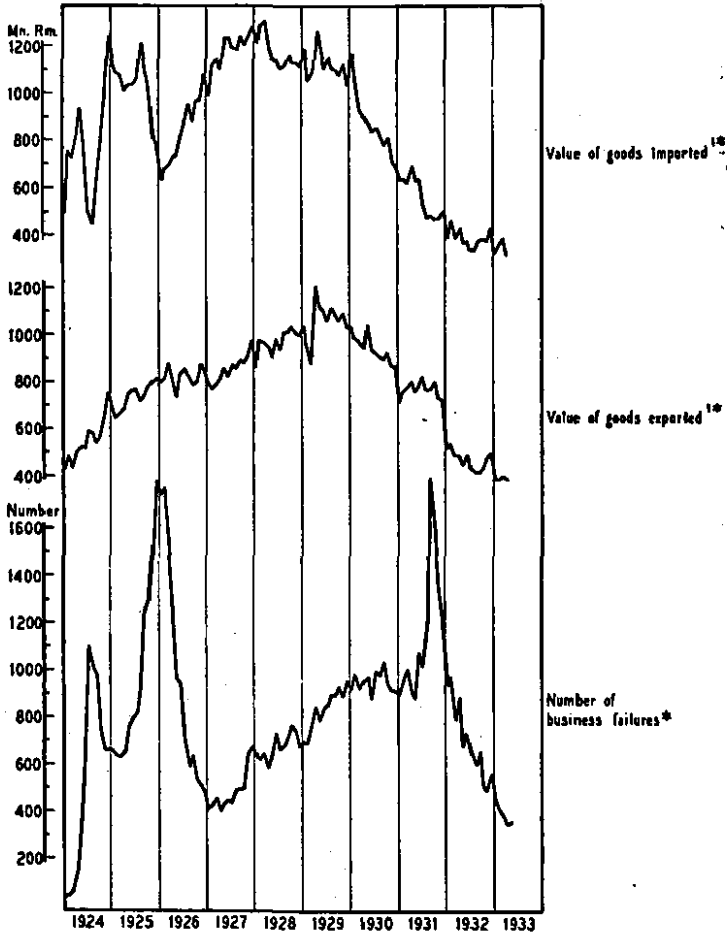
<sup>5</sup> 1925=100

<sup>6</sup> Monthly total in milliards of Reichsmarks

<sup>7</sup> Monthly total in hundred millions of Reichsmarks

CHART I (CONT.)

TIME SERIES ILLUSTRATIVE OF CYCLICAL FLUCTUATIONS  
IN GERMAN ECONOMY, 1924-1933



\* Seasonal fluctuations removed  
 † Monthly total in millions of Reichsmarks



## 1. CAPITAL AND CREDIT

Through the mass of literature pertaining to German economy since the currency stabilization there runs, like a red thread, the term *Kapitalnot*—need for capital. Wherever one's interests lie—in agriculture or in industry, in state finances or in community affairs, in the universities or in the transportation system—one meets with the opinion that German economy is weakened by a lack of capital.

### *a. Capital Losses, 1914–1922*

Explanation of the great capital losses of Germany is to be found in the story of the events that occurred from 1914 to 1923. The intense strain of the World War made heavy demands upon the supply of capital goods, and much that was worn out or destroyed was not renewed or restored. Furthermore, the requisitions of the victorious powers during the period 1918–23 led to additional large capital losses. The difficult years after the War, fraught with economic and political uncertainties, currency inflation and reparation quarrels, were characterized not only by reduction of capital supplies but also by the accumulation of much inefficient or superfluous production equipment.

Estimates in monetary terms of the net reduction in Germany's national income and wealth in the period of War and inflation are subject to wide mar-

gins of error. Moulton and McGuire estimate the losses sustained from 1914 to 1921 as a consequence of reduction in productive capacity, depreciation of plant and equipment, damage caused by the Russian invasion of East Prussia, surrender of foreign investments and other properties in accordance with the peace treaty, and from the decline in stocks of consumption goods, as amounting to 135 billion gold marks.<sup>15</sup> This would make the total loss as high as 45 per cent of the 1913 wealth of Germany.<sup>16</sup> Evidence of German production in the years immediately following the War indicates that this percentage is somewhat too high.<sup>17</sup> Nevertheless, in the absence of more accurate data, it may serve to illustrate the seriousness of Germany's economic losses incurred during and immediately after the War.

National income in the inflation years, 1920-23, was undoubtedly much below the pre-War levels.<sup>18</sup> But no accurate estimate can be made of the loss of

<sup>15</sup> H. G. Moulton and C. E. McGuire, *Germany's Capacity to Pay* (McGraw-Hill, 1923), pp. 190-3.

<sup>16</sup> Karl Helfferich's estimate of Germany's national wealth in 1913 was 300 milliard marks; *Deutschlands Volkswohlstand, 1888-1913* (Stilke, Berlin, 1915), p. 122.

<sup>17</sup> See J. W. Angell, *The Recovery of Germany*, p. 15; F. D. Graham, *Exchange, Prices, and Production in Hyper-Inflation, Germany, 1920-1923* (Princeton University Press, Princeton, 1931), pp. 277-320.

<sup>18</sup> See Graham, *op. cit.*, for estimates of production in the years of the inflation. There is reason to believe that the national income in 1923, the year of the Ruhr invasion and final currency collapse, was roughly 40 per cent below the 1913 level. In 1924, however, it was probably almost as great as in 1913 (in terms of 1913 purchasing power of the mark)—an indication of the very rapid recovery of German economy after the currency stabilization.

capital in these years. It is of interest here to note certain influences of the inflationary disturbances upon the accumulation of capital. Possibly the evils of the German inflation have been exaggerated, at least in terms of the *national* economy; nevertheless, its consequences were very serious. It is true that there was considerable saving during this period, both on the part of individuals and of corporate enterprises. Indeed, after the stabilization it looked at first as if the German economy were plentifully supplied with capital goods—machines, factory buildings and other production equipment. Closer examination, however, revealed that a considerable part of these goods was highly depreciated and economically ineffective. The rapid and almost continuous inflation of the currency stimulated investment of surplus income in every variety of durable goods, regardless of whether or not it could promise adequate future productiveness. Of paramount importance at the moment was the conversion of dizzily depreciating paper marks into anything tangible. Later, during the period of industrial 'rationalization', from 1925 to 1928, it was found necessary to scrap much of such 'inflation capital'.

Furthermore, the inflation reduced the loans of innumerable creditors to utter worthlessness and thereby sapped the foundations of the confidence essential to a restoration of the old credit system. Also, bitter memories of sudden dissipation of hard-won savings and investments acted as a brake upon

incentives to save, even after the stabilized currency seemed quite secure. These factors undoubtedly contributed to the scarcity of loan-fund capital and the credit restrictions of the months immediately following stabilization. Probably most of the German foreign investments that remained at the end of the War were wiped out during the inflation period. Finally, the spectacular 'flight from the mark' led to a very appreciable export of capital from Germany.<sup>29</sup>

Thus, "at the close of 1923 German business was nearly bankrupt. The inflation and subsequent stabilization had wiped out most of its working capital, and not only were there no funds available for reconstruction, there was often not even enough to carry on daily operations."<sup>30</sup> Germany was in dire need of loan-fund capital. This need was most acute immediately after stabilization, but the effects of the decade of war and inflation were felt throughout the period here considered. They were wounds that could not be healed in the course of seven or eight years.

<sup>29</sup> The so-called McKenna Committee, which was appointed by the Reparation Commission in November 1923 for the purpose of determining the amount of German capital abroad, and the means for bringing it back to Germany, estimated it to be approximately 6.75 milliard marks. This amount, however, does not appear to be identical with the 'flight from the mark'. See *Reports of the Expert Committee appointed by the Reparation Commission* (London, 1924), pp. 126-38. See also Angell, *op. cit.*, pp. 17-60, and Graham, *op. cit.*, *passim*, for consideration of the effects of the inflation upon German economy.

<sup>30</sup> Angell, *op. cit.*, p. 190.

The work of reconstruction was closely dependent upon the processes of capital accumulation. The needs of a growing population, accustomed to relatively high standards of living, and obligations to pay large foreign political debts required greater productivity. But extension and renovation of the economic machinery—entailing vast capital investments—was a precedent condition essential to such increased productivity.<sup>21</sup> The public authorities, in addition to borrowing in order to subsidize the erection of dwellings, sought funds in large amounts to fulfill sweeping programs of construction for other public purposes—stadia, schools and museums, as well as railways, power plants, canals and harbors.

<sup>21</sup> Germany's population increased from 62,846,000 in 1924 to about 65,092,000 in 1930—a growth of approximately 374,000 each year.

The population pressure was especially felt in the lack of adequate housing facilities. As in other countries, a shortage of dwellings was a consequence of the War. But it was especially pronounced in Germany because even before the War housing had been inadequate. The Reich, state and commune governments were much interested in encouraging building construction, and about half the funds used for such purposes from 1924 to 1930 were obtained through the public authorities (see *Reports of the Agent General for Reparation Payments*, December 10, 1927, p. 156; May 21, 1930, p. 283). Furthermore, the working population was increasing more rapidly than the total population. It has been estimated that at the beginning of 1930 the number of potential income producers was 5 per cent greater than in 1925, whereas the total population had grown by only 3 per cent (*Statistisches Jahrbuch für das Deutsche Reich*, 1931, pp. 7, 18). For this reason alone, therefore, it was socially desirable that Germany's capital equipment expand relatively more than its total population.

The reparation burden was a special factor making for productive expansion. With very little left of its pre-War foreign investments, it was necessary for German economy to prepare to meet this obligation ultimately by the exportation of goods and services.

Further demands for loan-fund capital, less social in nature, came from private enterprise, which was interested in improving plant and equipment for the purpose of lowering production costs and expanding profits. Agriculture, by reason of special difficulties confronting it, also became a heavy and consistent borrower. As the activity of trade and industry began to gather momentum, heavy demands were made for the purpose of carrying goods through the processes of production and distribution.

*b. Domestic Accumulation of Capital, 1924-1933*

The internal accumulation of capital made great progress during the years 1924-30, but it was not nearly sufficient to satisfy this combination of demands. The relatively high interest rates, the almost continuously strained condition of the money markets, manifested the size and urgency of Germany's need for capital.

It is difficult to form a clear picture of the extent of domestic capital accumulation during the years after the inflation.<sup>22</sup> Nevertheless, several authorities have essayed estimates. James W. Angell fixes the total of domestic savings in the years 1924-28 at 24

<sup>22</sup> "The question of the magnitude of these savings has been a highly controversial one in Germany. The estimates vary widely, and are often based on entirely dissimilar methods. No figure can be reached which is assuredly correct, and the estimate finally selected must necessarily rest to a considerable extent on individual judgment." (Angell, *op. cit.*, p. 326).

to 25 milliard Reichsmarks.<sup>23</sup> He approximates the annual distribution of total savings, in millions of Reichsmarks, as follows:

1924	1,000
1925	3,500
1926	3,000
1927	8,500-9,000
1928	8,000-8,500
Total	24,000-25,000

The most extensive estimate, in terms of the period embraced, was made by Erich Welter, financial editor of the *Frankfurter Zeitung*:

#### Net Domestic Additions to Capital, 1925-1930<sup>24</sup>

<i>(in millions of Reichsmarks)</i>	
1925	6,500
1926	7,500
1927	9,000
1928	9,000
1929	7,500
1930 "probably less than"	6,000
Total	45,000

Welter suggests that national saving declined rap-

<sup>23</sup> This total is the sum of net public security issues, land mortgages, estimated savings of business enterprises, savings deposits, insurance and government savings, etc., less estimated duplications. Allowing for estimated losses in agriculture, the net domestic addition to domestic capital is approximated at 20 to 21 milliard Reichsmarks (*Ibid.*, pp. 326, 327, 408).

<sup>24</sup> See *Frankfurter Zeitung*, May 8, 1931, p. 5; *Wirtschaftskurve . . . . der Frankfurter Zeitung*, Vol. 7, Nr. 3, 1928, pp. 301-5; H. R. Knickerbocker in the *New York Evening Post*, January 29, 1932, p. 2. Welter's estimates are based upon various evidences of increase of loan-fund capital.

idly in the first half of 1931, and that after the bank credit crisis of the summer, capital accumulation gave way to net capital consumption.<sup>25</sup> The general tendency portrayed in estimates of national savings

TABLE 2  
EVIDENCE OF THE VOLUME OF SAVINGS, 1924-1931<sup>1</sup>  
(in millions of Reichsmarks)

YEAR	TOTAL SAVINGS DEPOSITS IN SPARKASSEN AT END OF YEAR	ANNUAL VOLUME OF DOMESTIC CAPITAL ISSUES		ANNUAL EXCESS OF INSURANCE PREMIUMS OVER PAYMENTS
		BONDS	STOCKS	
1924		440	148	
1925	1,629	1,080	656	530
1926	3,091	3,579	988	592
1927	4,665	2,841	1,438	759
1928	6,990	2,905	1,339	871
1929	9,016	1,553	979	874
1930	10,400	2,667	555	973
1931	9,722	1,333	784	
1932	9,917	558	145	

<sup>1</sup> *Statistisches Jahrbuch, 1928-1932, passim*; Institut für Konjunkturforschung, *Vierteljahrshefte zur Konjunkturforschung, 1926-1933, passim*.

is fairly well confirmed by such evidences of capital formation, published currently, as the annual vol-

<sup>25</sup> Estimates of capital accumulation in 1925, 1926 and 1927 made by the Reichskreditgesellschaft—a bank indirectly owned by the Reich—are 6.4, 6.3 and 7.6 milliard Reichsmarks. These figures are arrived at by deducting capital imports, less such as was used for currency cover, from the estimated surplus of production (Reichskreditgesellschaft, *Germany's Economic Development During the Second Half of the Year 1927*, p. 15).

A study by the German Institut für Konjunkturforschung indicates that the increase in capital goods in German economy, 1924-28, was about 42 milliard Reichsmarks. Subtracting capital imports from this



ume of savings bank deposits, new capital issues and the excess of insurance premiums over payments.

On the basis of such evidence as this it may be said that the accumulation of capital immediately after currency stabilization was much below that in the period immediately preceding the War. After 1924 there was a rapid increase, but beginning in 1929 a decline in the rate of accumulation set in. The years 1931 and 1932 have probably witnessed a net reduction in domestic capital supplies.<sup>26</sup>

Total national savings during the years 1924-30 were surprisingly large, in view of the extraordinary political and economic difficulties of the preceding decade (at a guess, these savings might be put somewhere between 40 and 45 milliard Reichsmarks). Nevertheless they were not nearly sufficient to meet the needs of the economy.<sup>27</sup>

total gives the sum of 28 milliard Reichsmarks as representing domestic additions to capital supplies (Institut für Konjunkturforschung, *Vierteljahrshefte zur Konjunkturforschung*, Sonderheft 22, Kapitalbildung und Investitionen in der deutschen Volkswirtschaft, 1924 bis 1928, Berlin, 1930).

The widely-quoted estimate of Karl Helfferich is that national savings in 1913 amounted to approximately 8-8.5 milliard gold marks (*loc. cit.*). In terms of mark purchasing power in 1928 this would amount to about 13 milliard.

<sup>26</sup> Reichskreditgesellschaft, *Germany's Economic Situation at the Turn of 1932-33*, p. 40.

<sup>27</sup> There is reason to believe that the proportion of national income saved in the post-inflation period was less than before the War. One of the most significant factors making for a reduction in savings in recent years is the change in the distribution of personal income. Since the War there has been a pronounced decline in the total amount of large individual incomes. For instance, the total of personal incomes over 5,000 marks a year is estimated to have fallen from

Evidence of the inadequacy of capital is afforded by the relatively high interest rates prevailing in Germany throughout this period and by the consequent inflow of foreign funds. Discount rates of private banks in leading financial centers may be considered representative for present purposes.

29.9 per cent of national income in 1913 (in terms of 1928 mark purchasing power) to 23.8 per cent in 1928. This shift is especially marked in the higher income brackets. The sum of incomes over 50,000 marks (1928 purchasing power) amounted to 10.7 per cent of national income in 1913 and only 3.5 per cent in 1928 (see *Statistisches Jahrbuch . . . .*, 1931, p. 533).

The post-War growth in the burden of government—manifested in heavy per capita tax charges—has also tended to decrease the volume of national savings. Angell (*op. cit.*, p. 316) estimates the total 'real' cost of government to be 65 per cent greater in 1928 than in 1913. Reparation payments, moreover, have been an outright drain on savings. Saving tends, of course, to be relatively larger on the part of individuals receiving higher (or 'surplus') incomes than of individuals of smaller means. A reduction in the total amount of 'surplus' incomes should lead, *ceteris paribus*, to a reduction in national savings.

Furthermore, fear of the loss of individual wealth—exaggerated by memories of losses incurred during the inflation period—may have contributed to restrain somewhat the willingness to save even after stabilization was effected (see Erich Welter, *Die Ursachen des Kapitalmangels in Deutschland*, Mohr, Tübingen, 1931, *passim*).

The estimates of national income and savings appear to indicate that although total annual income after 1926 was greater than in 1913, the proportion saved was less than in the last pre-War year. Thus, out of a total income in 1913 of 65–69 milliard marks (1928 Reichsmark purchasing power), something like 12,000 or 13,000 million, or 17 to 20 per cent, was saved (Helfferich, *op. cit.*, p. 122; Statistisches Reichsamt, *Das deutsche Volkseinkommen vor und nach dem Kriege*, Einzelschrift Nr. 24. . . ., Berlin, 1932, p. 69). In 1928, however, out of a total income of approximately 75 milliard, there was a saving of 9 milliard, at most, or about 12 per cent (see *Wirtschaftskurve . . . der Frankfurter Zeitung*, Vol. 7, Nr. 3, 1928, pp. 301–5).

TABLE 3  
PRIVATE DISCOUNT RATES ON PRIME BANKERS'  
ACCEPTANCES<sup>1</sup>  
(annual averages)

YEAR	BERLIN	LONDON	PARIS	NEW YORK
1913	4.98	4.39	3.84	5.58
1924	9.20 <sup>2</sup>	3.46	5.21	3.11
1925	7.62	4.13	5.77	3.32
1926	4.88	4.46	5.66	3.59
1927	5.47	4.23	2.91	3.45
1928	6.54	4.16	2.98	4.10
1929	6.87	5.26	3.46	5.03
1930	4.43	2.57	2.32	2.46
1931	6.19 <sup>3</sup>	3.60	1.57	1.58
1932	4.95	1.88	1.31	1.31

<sup>1</sup> *Statistisches Jahrbuch*. . . ., 1928, supplement, pp. 168-9; *Federal Reserve Bulletin*, 1928-33, *passim*.

<sup>2</sup> December rate.

<sup>3</sup> Average of eleven months, no rate available for August 1931.

As is apparent in Table 3, the annual averages of representative short-term money rates in Berlin after stabilization were considerably higher than corresponding rates in London and New York, and, with one exception, much higher than those in Paris. The spread between German and foreign long-term money rates was even greater.

#### *c. Inflow of Foreign Capital, 1924-1930*

Capital imports to Germany took the form not only of long- and short-term loans but also of direct participation in domestic business enterprise, of purchases of stock shares, buildings and land. How-

TABLE 4

ESTIMATE OF FOREIGN INVESTMENTS IN GERMANY<sup>1</sup>

1924-1931

(in milliards of Reichsmarks at end of year)

YEAR	SHORT-TERM INVESTMENT	LONG-TERM INVESTMENT	OTHER INVESTMENTS	TOTAL INVESTMENTS
1924	Unknown	1.0	Unknown	Unknown
1925	Unknown	2.5	Unknown	Unknown
1926	4.1	4.1	3.5	11.7
1927	6.6	5.4	4.5	16.5
1928	9.0	7.0	5.5	21.5
1929	11.7	7.3	6.0	25.0
1930	10.3	9.2	6.0	25.5
July 1931	8.0	9.0	6.0	23.0

<sup>1</sup> Report of Committee Appointed on the Recommendation of the London Conference, 1931, Annex III, in the *Economist*, August 22, 1931, Supplement.

The distribution of the foreign investment of 23 milliard Reichsmarks in Germany in July 1931 was indicated to be as follows:\*

## SHORT-TERM

Public authorities	0.8	
Banks on current accounts, acceptance credits and other liabilities	5.1	
Other short-term	1.5	
Reichsbank and Golddiskontbank credits	0.6	8.0

## LONG-TERM

Foreign issues	8.5	
Mortgage credits, etc.	0.1	
German internal issues	0.4	9.0

## OTHER

Shares and other holdings	4.0	
Real estate	2.0	6.0

23.0

\* *Ibid.*, Annex IV. Investigations by the German government, made subsequent to the report of the Wiggin Committee, show that the total commercial foreign debt, and especially the amount borrowed

at short-term, was larger in July 1931 than is indicated in the above estimate. The short-term loans were fixed at 13.1 milliard Reichsmarks and the long-term investments at 10.7 milliard. Other investments were held to amount to 5.9 milliard. This would bring the total foreign capital in Germany in July 1931 to about 29.7 milliard Reichsmarks and probably to about 32 milliard in December 1930. In February 1932 the short-term debt was estimated to amount to 8.7 milliard, and the long-term debt, to 10.3 milliard (see *Frankfurter Zeitung*, November 1, 1931, p. 5; *Wirtschaft und Statistik*, Vol. 13, Nr. 16, pp. 486-8).

ever, there is reason to believe that loans have made up the bulk of the capital inflow.<sup>19</sup>

The committee appointed on the recommendation of the London conference of July 20-23, 1931 (generally known as the Wiggin Committee) estimated the investment of foreign capital in Germany to be as shown in Table 4. The foreign loans are estimated by the German Registry Office for Foreign Indebtedness to have been reduced between July 1931 and October 1932 by 4.3 milliard Reichsmarks, representing a reduction of 3.8 milliard in short-term credits and of 0.5 milliard in long-term credits.<sup>20</sup>

Thus the inflow of foreign funds was very rapid until 1929, but afterward, just as in the case of domestic capital accumulation, the rate of increase declined. In 1931 and 1932 increase of foreign investments gave way to net decrease.

The differential between German and foreign

<sup>19</sup> See Angell, *op. cit.*, p. 192.

<sup>20</sup> Statistisches Reichsamt, *Wirtschaft und Statistik*, Vol. 13, Nr. 9, pp. 273-6.

interest rates was so continuously large that it sufficed to ensure a fairly steady volume of long-term loans from abroad (even during the recession of 1925-26) until about the end of 1928. The remarkably rapid upward trend of German economy in the period 1924-28 paralleled the uninterrupted and equally rapid increase in the capital supply made available by domestic saving and long-term borrowing from abroad. The decline in 1929 of loans of long maturity is attributable in part to Reichsbank policy of reducing foreign borrowing, but more to strained conditions in foreign speculative markets. In 1930, however, loans of this type were again extended in large amount to German economy.

The inflow of short-term credits manifests a much closer relationship with fluctuations of German economy. In 1925, reflecting high industrial production and heavy raw materials imports, and the consequent need for credits, the inflow of short-term funds was maintained at the high level of approximately 200 million Reichsmarks per month.<sup>80</sup> However, towards the end of the year, with the beginning of recession, production sank and money rates declined. The inflow of short-term credits also fell off, and for a time during the first half of 1926 there was even an outflow. With the beginning of recovery was initiated another period of heavy inflow of

<sup>80</sup> According to an estimate in *Vierteljahrshefte zur Konjunkturforschung*, 1929 (Institut für Konjunkturforschung), I, p. 41.

short-term funds from abroad, which continued almost without interruption throughout 1927 and 1928. During the first half of 1929 there was a rapid withdrawal of foreign short credits; afterward funds again flowed into Germany. In 1930 and 1931, years of sharp decline in business activity, a succession of disturbances—to a large extent political—shook the confidence of creditors. Heavy withdrawals of foreign money began in the autumn of 1930; after subsiding for a time, they were renewed in 1931, and finally in the summer took on the character of a run on the German financial structure.<sup>31</sup> Financial collapse was averted only by unusual measures of debt moratorium and governmental control of economic activities. The efflux continued, though at a slower rate, during the remainder of 1931 and during 1932.

Germany was able in the post-inflation years to begin rebuilding its own investments in foreign countries. The Wiggin Committee estimated that German investments abroad from the beginning of 1926 to the end of 1930 amounted to approximately 9.7 milliard Reichsmarks.<sup>32</sup>

<sup>31</sup> The short-term credits are estimated to have declined one milliard Reichsmarks between the end of July 1931 and the beginning of November 1931 (*Frankfurter Zeitung*, November 1, 1931, p. 5).

<sup>32</sup> *Report of Committee Appointed on the Recommendation of the London Conference, 1931*, Annex III, in the *Economist*, August 23, 1931, Supplement.

The application of new capital supplies in the years 1924-28 (from domestic as well as foreign sources) is shown by the Institut für Konjunkturforschung to have been as follows:\*

	PLANT AND EQUIPMENT		COMMODITY STOCKS	
	AMOUNT IN MILLIONS OF REICHS- MARKS	PER- CENT- AGE OF TOTAL	AMOUNT IN MILLIONS OF REICHS- MARKS	PER- CENT- AGE OF TOTAL
Industry	3548	13.3	5408	43.3
Electric power, gas and water plants	2596	9.7	60	0.5
Transportation	4379	16.3	-98	-0.8
Agriculture	2402	8.9	239	1.9
Handicraft	705	2.6	566	4.5
Retail trade	628	2.3	4437	35.5
Wholesale trade	335	1.3	1880	15.1
Residential construc- tion	5438	20.3	...	...
Public administra- tion	5677	21.1	...	...
Public welfare and social insurance	341	1.3	...	...
Other economic groups	781	2.9	...	...
<i>Total</i>	26830	100.0	12492	100.0

Total investment in plant and equipment 26830 million Reichsmarks  
Total investment in commodity stocks ... 12492 " "  
Increase in the gold stocks of the banks of  
issue ..... 2274 " "

\* *Statistisches Jahrbuch*, 1931, p. 536. (This table is taken from Institut für Konjunkturforschung, *Vierteljahrshefte zur Konjunkturforschung*, Sonderheft 22, Kapitalbildung und Investitionen in der deutschen Volkswirtschaft, 1924 bis 1928, Berlin, 1930).

Thus, of the capital supplies made available to German economy in 1924-28 something like 26 per cent went to industry; 19 per cent was taken by commercial enterprises; 34 per cent went to the governments and public utilities; 7 per cent was used for agricultural purposes; and 14 per cent was invested in dwellings. About two-thirds of the total was applied to extension of plant and equipment.

The above table gives some clue to the amount of capital placed in enterprises not subject to the profits criteria of private economy. Most of the items listed under public administration, public welfare and social insurance, and residential construction, and possibly also



#### d. *The Reichsbank, the Money Market and the Credit System*

The urgent demands for capital, not only from industry and agriculture but also from the federal and local governments, the insufficiency of domestic savings and the consequent importation of foreign funds, made for almost continuous tension in the German money markets in the years here under review. At times the peculiar credit situation made responsible banking control well-nigh impossible. This was especially pronounced in the relationship between the inflow of foreign money and the policy of the Reichsbank. The central bank's attempts to control domestic money markets were often frustrated by the behavior of foreign funds. When the

transportation, belong in this category. The governmental policy of liberally subsidizing building construction has done much to diminish the capital supplies available to private industry and commercial enterprises. It is possible that many of these funds have been invested unprofitably, from the viewpoint of private economy. Of course, investments whose pecuniary returns do not cover interest expenses may still be socially desirable.

There has probably also been much uneconomic application of capital in private enterprise, especially in the case of agriculture. Moreover, investment that from the standpoint of the national economy is excessive was apparently widespread in manufacturing industry. Basking in the shelter of tariffs and cartels, numerous industries have been encouraged to expand their productive capacity beyond all possible social needs (Cf. *Nachkriegskapitalismus*, published by the *Frankfurter Zeitung*, Frankfurt a.M., 1931, pp. 35-44; Angell, *op. cit.*, pp. 208-11, 250; Ernst Wagemann, *Zinshöhe und Kapitalverteilung*, in *Kapital und Kapitalismus*, Bernhard Harms, ed., Reimar Hobbing, Berlin, 1930, pp. 356-73; Ausschuss zur Untersuchung der Erzeugungs und Absatzbedingungen der deutschen Wirtschaft, *Die deutsche Eisenerzeugende Industrien*, Mittler & Sohn, Berlin, 1930, *passim*).

Reichsbank lowered its discount rate, the differential between foreign and domestic rates was reduced, foreign money tended to flow out, and credit markets were tightened rather than eased. When, on the other hand, it raised its rate in order to check credit expansion, the rate differential widened, foreign money tended to enter Germany and its policy was again rendered nugatory. On several occasions credit rationing was resorted to in order to effect a restrictive policy. Also, the Reichsbank encouraged the formation of an official advisory council whose purpose it was to check extravagant foreign borrowings of the various municipalities and municipally-owned enterprises. However, it appears that the net effect of these extraordinary measures was to shift demand from foreign to domestic markets, to raise money rates, and finally to make for increased private borrowing from abroad, much of it at short-term. Also, the Reichsbank was frequently embarrassed by the lending operations of governmental bodies. Furthermore, large foreign purchases of German stock shares, especially in 1926 and 1927, seem to have been responsible for pushing up share prices to levels at which stock yields were far below the yields of first-class bonds.<sup>38</sup> This rise in stock prices was undesirable in that it brought speculative erratic funds into German markets and also absorbed exces-

<sup>38</sup> "By the end of 1926 the average dividend return on shares listed on the Berlin Bourse . . . was barely 3 per cent. This compared with an average interest rate on bonds of 7¼ per cent." (*Report of the Agent General for Reparation Payments, June 10, 1927, p. 71.*)

sive amounts of domestic credit. Early in 1927 the Reichsbank forced a contraction in the use of credit on the stock market. Share prices fell rapidly, and, except for a slight revival in the spring of 1928, continued to decline until the exchanges were closed in July 1931.

Large domestic issues of securities throughout the period 1924-30 exerted heavy pressure on the German money markets. By the end of 1930 approximately 21 milliard Reichsmarks of stocks and bonds had been absorbed within Germany. But the amount of potential offerings far exceeded the absorptive capacity of the domestic markets. Whenever there were indications of easier credit conditions, the markets were immediately overwhelmed with loan applications. Large and continuous demands for funds on the part of local governments probably did much to add to the pressure. Some relief was afforded by the sale of securities in foreign countries.

The relatively great volume of short-term loans, supported to a large extent by foreign funds, has probably been one of the greatest potential dangers for the entire economy. The Institut für Konjunkturforschung has estimated that the total volume of outstanding debts at the end of 1930 was approximately 90 milliard Reichsmarks of which about 35 per cent consisted of short-term credits. In 1913 the volume of short-term debts was not more than 15

per cent of the total debt.<sup>24</sup> But not only was the proportionate amount of short credits much greater than before the War. Since the stabilization such credits have also been used to a large degree for purposes that were formerly satisfied by long-term loans. In the years 1924-30 domestic capital supplies were inadequate to meet demands; nevertheless, high interest rates did not reduce the pressure for funds. Such rates attracted foreign lenders, but, because of political and economic uncertainties, many of these lenders were willing to extend credits only on the condition that they be subject to withdrawal at short notice. Thus a situation was created in which large amounts of funds that nominally might be recalled within a few months were used for fixed-capital purposes. It was a situation that could suddenly become acute and could threaten financial stability. "The fact that the (German) banks . . . allowed themselves to be made the buffers between industrial and agricultural debtors, bent on long investments, and the commercial and banking creditors, wishing for a quick return of their money, has shaken their foundations completely. It made them the chief sufferers, when, owing to political and commercial panic, billions were suddenly withdrawn."<sup>25</sup>

<sup>24</sup> Institut für Konjunkturforschung, *Wochenbericht*, Vol. 4, Nr. 26, September 29, 1931.

<sup>25</sup> M. J. Bonn, Banking and Credit, in *The Present Economic State of Germany* (Notgemeinschaft der deutschen Wissenschaft, Berlin, 1931), p. 56. For an interesting account of the relationships between foreign

The 'panic' was precipitated in the middle of 1931 by the accelerated withdrawals of foreign balances from the German banks, which led to a rapid increase in domestic withdrawals of deposits and culminated in a general assault on the country's banking structure. The banks and stock exchange were closed and vigorous measures of governmental control were invoked. The weeks subsequent to the panic witnessed the gradual resumption of banking operations, extension of the Reichsbank's control over foreign exchange, and inauguration of a moratorium for the larger part of foreign creditors' claims against German industry. During the early autumn most of the domestic funds withdrawn during the crisis flowed back to the banks. But the foreign credits withdrawn during 1931—estimated to amount to 3 milliard Reichsmarks—did not return. The lending capacity of the German banks was much reduced not only in consequence of loss of resources during the credit crisis, but also because the danger of renewed domestic withdrawals required greater insistence than formerly that loans be liquid.

During the months after the crisis, the German money markets—severed from foreign markets by

capital and the German money markets, see Angell, *op. cit.*, pp. 195-205. See also *Reports of the Agent General for Reparation Payments, 1925-1930, passim*; Wilhelm Prion, *Der deutsche Geld- und Kapitalmarkt seit der Stabilisierung*, in *Strukturwandlungen der deutschen Volkswirtschaft*, II, pp. 327-49 (Bernhard Harms, ed., Reimar Hobbing, Berlin, 1928).

'standstill' agreements and by exchange control, and no longer subject to influence by surplus government funds—became closely dependent upon the Reichsbank. The enormous losses of foreign and domestic funds, and difficulties attending the liquidation of 'frozen' loans led to rigidity and tightness in the financial markets. The Reichsbank sought to counteract this by reducing its discount rate and by directly stimulating a general lowering of interest rates. Furthermore, the central bank undertook to thaw out German credits that were frozen in other countries, sponsored agreements to facilitate the transfer of payments arising in foreign trade, tightened its control of exchange, and encouraged the conversion of foreign short-term loans into long-term loans. During 1932, largely as a result of these measures, the tension of the money markets relaxed and the confidence of debtors and creditors was gradually restored.

## 2. INDUSTRIAL PRODUCTION

During most of the inflation period German industry—stimulated by brisk demand and protected from effective foreign competition—was active. Many new enterprises were founded, established firms expanded their plants and there was a wide extension of cartels, trusts and combines. But there was little incentive to make technical and administrative improvements. Labor was cheap, competi-

tion from abroad was not greatly feared and profits had to be invested quickly in tangibles so as to prevent their dissipation.

After stabilization, however, the stimuli originating with the currency depreciation disappeared and German industry was once more exposed to world competition. Many enterprises that had prospered during inflation found adjustment to the changed situation difficult. Administrative and financial, as well as technical, reorganization was necessary. The urgent need for 'rationalization' became an outstanding topic of the day.<sup>30</sup> Private business was assisted in the reorganization of its productive processes by agencies, subsidized by the Reich, which sought to extend rationalization into almost every branch of economic life.

This more or less radical reorganization of German industry was especially pronounced from 1925 to 1927. The process of correction and improvement eliminated unprofitable business units that had been founded during the inflation. Many aggregated concerns were disintegrated or were reorganized from 'vertical' trusts into 'horizontal' combinations in order to control the output of identical products

<sup>30</sup>The Reichskuratorium für Wirtschaftlichkeit, the German central rationalization bureau, defines rationalization as "the adoption and employment of all the means of increasing efficiency which are furnished by technical science and systematic organization. Its aim is to raise the general level of prosperity by cheaper, more plentiful and better quality goods." Quoted by Robert A. Brady in *The Meaning of Rationalization: An Analysis of the Literature*, *Quarterly Journal of Economics*, May 1932, p. 527.

through the concentration of manufacture in efficient enterprises. Inability to carry the cost of reorganization, as well as technical and administrative difficulties, led to many business failures. German industry did not have capital sufficient to finance rationalization alone. Foreign funds had to be secured. The larger and better-known industrial organizations were able to secure the necessary capital from abroad directly, but most firms were forced to seek foreign capital by way of the German money markets; this tended to make these funds more expensive.

In spite of many difficulties, reorganization and readjustment were carried on with characteristic thoroughness. The speed with which this was effected was made possible mainly by the large and rapid investment of foreign capital in Germany after the stabilization. By 1928 the productive capacity of the leading manufacturing industries was probably from 30 to 40 per cent greater than in 1913. But the foreign trade possibilities had not expanded enough, nor was the home market sufficiently expansive to support so large a productive capacity. The actual physical volume of industrial output of the leading manufacturing industries was probably "less than 15 per cent above the 1913 volume."<sup>27</sup> After the period of swift recovery and expansion had ended, the lack of markets for the rationalized German industrial system became star-

<sup>27</sup> Angell, *op. cit.*, p. 183.



tingly clear. There was not only the burden of excess plant capacity, in the face of heavy capital charges, but also a pressure from labor for higher wages. Rationalization led to the elimination of thousands of workers, and heavy unemployment made for growing social charges. Industries participating largely in export trade were able to sustain their output better than those manufacturing goods chiefly for sale in domestic markets. "It is possible that the development in Germany from the reorganization of the currency in 1924 up to the end of 1927, which was characterized by rising wages and retail prices and by a rapid rationalization and increase of productive capacity in manufacturing industries, also produced a lack of balance which called for subsequent adjustment, although the liquidation period was somewhat delayed by the good business conditions abroad in 1928 and in the first half of 1929." <sup>88</sup>

### 3. AGRICULTURAL PRODUCTION

In the post-inflation period German agriculture has faced many difficulties. Problems of production technique and finance have been made the harder because of the lack of fertile soils and the inertia of habits and customs among the peasants. Within the new boundaries created by the Treaty of Ver-

<sup>88</sup> League of Nations, *The Course and Phases of the World Economic Depression* (Geneva, 1931), pp. 232-3.

sailles more land has been cultivated, yet in the leading crops the yield per acre has generally been less in the post-inflation period than in the years immediately preceding the War.<sup>39</sup> That is, Germany's agricultural productivity has declined. This reflects not only the cultivation of inferior land, but also the inability of agriculture to effect soil and equipment renovations and improvements.

Inflation deprived the German farmers of much of their savings and stimulated investment in unproductive tangible goods. Stabilization exposed them to the influences of world markets, and, despite protective tariffs, the prices of German agricultural products have tended to decline with world prices. The competition of the dairy and vegetable products from Denmark and The Netherlands, which had progressed greatly in their technique of production and marketing during the War and post-War years, was especially difficult to meet. The farmers were forced to borrow in an economy that was almost bare of loan capital. Interest rates were excessive and many loans were contracted to supply necessary working capital and funds to pay off old debts and taxes.<sup>40</sup> Although there had been a "para-

\* See Ch. I, Part A.

<sup>40</sup> "Until the credit collapse of July 1931 mortgage loans were given up to 40 per cent of the value of the farm and cost from 9½ to 10 per cent. The short-term personal credits of the farmer were still more expensive." Max Sering, in *The Present Economic State of Germany* (study completed under the auspices of the Notgemeinschaft der Deutschen Wissenschaft, privately printed in Germany, 1931).

lyzing accumulation of debt", much of it was incurred merely in order to keep the existing system in operation and did not add to the effectiveness of the latter. Furthermore, during the relatively prosperous post-inflation years, several crops were inferior, and the larger crops from 1928 to 1932 were harvested at a time of falling agricultural prices. In this period, also, the prices of non-agricultural commodities were considerably more above their 1913 level than the prices of agricultural products, that is, the farmers have had to pay relatively high prices for industrial products. Thus the German farmers have been unable to save much. Indeed, in order to keep from sinking more deeply into debt, they have been obliged to lower their standards of living.<sup>41</sup>

<sup>41</sup> The following table gives evidence of the price disparity under which German agriculture is suffering:

	PERCENTAGE CHANGE FROM AVERAGE OF 1925-29 TO FEBRUARY 1933
<i>Prices of goods sold by farmers</i>	
Prices of agricultural products	-45
<i>Prices of goods bought by farmers</i>	
Prices of agricultural equipment (machines, fertilizer, fuel, etc.)	-20
Prices of household furnishings	-35
Prices of clothing	-30
Interest rates	-22
"Tariff" wages	± 0
Social insurance	+ 7

Despite the offsetting factors of reduced production costs and increased agricultural output, the purchasing power of the agricultural population was much reduced during the period 1928-32 (see Institut für Konjunkturforschung, *Vierteljahrshefte zur Konjunkturforschung*, Vol. 7, Nr. 4, pp. 197-203).

Credit difficulties have steadily increased with the deepening depression in recent years. While they did not materially interfere with the harvesting of crops in 1931 and 1932, they adversely influenced the marketing of agricultural produce. High interest rates and uncertainty concerning agricultural prices curtailed purchasing by cooperatives, middlemen and fabricators of foodstuffs, who were inclined to leave the storage of crops to the producers and to depend upon 'hand-to-mouth' buying. This added anew to the burdens carried by agriculture and contributed to further price declines.

The efforts to extend 'rationalization' into agriculture met with obstacles. The mechanization of production made some progress, but it is difficult to apply to German cultivation, much of which is small-scale, mixed and devoted to root crops. "The commercial side is also bad. In the main the prevailing methods of selling the crops and getting them to market are costly and inefficient, and the bookkeeping practices are antiquated."<sup>42</sup> The conservatism of the small farmers, who constitute the majority of the agricultural population, has also obstructed greater reorganization. Although agricultural technique and marketing methods have improved within recent years, much opportunity for further cost reduction still remains.

The Government has made extensive attempts to relieve agriculture. It has imposed tariffs for the

<sup>42</sup> Angell, *op. cit.*, pp. 251-2.

benefit of German producers, has made large amounts of credits available to farmers and has exerted pressure to reduce interest rates on agricultural loans. However, this relief has been effected at a high cost to the economy as a whole.

Angell, writing in 1928, summarized the consequences of the agricultural difficulties as follows: "The failure to increase agricultural production means that food prices are relatively high, while at the same time Germany must continue to buy an important part of her foodstuffs in other countries. . . . Nearly all of these commodities come in over heavy protective duties . . . and in most cases the resulting increase in import prices is also reflected in domestic prices. Agriculture is thereby helped somewhat, but at a heavy cost to industry and commerce. The high price of foods in turn raises the cost of living of the working classes, and this entails higher money wages. Industrial costs of production are forced up to correspond, and the exporting power of the industries themselves is thus restricted, which is particularly undesirable in the present general situation of the country. Removal of the agricultural tariff would help the domestic price situation, but the current depression in agriculture itself would then be seriously aggravated. At the same time imports from abroad would be increased, and a further burden would then be placed on the already strained international financial position." <sup>44</sup>

<sup>44</sup> *Ibid.*, pp. 252-3.

The very length and depth of the recession and depression in German industry during the years 1928-32 greatly increased the agricultural difficulties. In periods of less severe industrial depression the consumption of domestic farm products by the non-agricultural population was not seriously restricted. Purchases of industrial products and of imported foodstuffs tended to be reduced before those of domestic foodstuffs. This, for instance, was true of the depression in 1926. But after 1928, with the continual decline in German purchasing power, the imports of agricultural products steadily decreased. This meant that fluctuations in the demand for foodstuffs must be more and more fully reflected in German agriculture. The sharp decline of consumption during 1931 and 1932 therefore led to especially drastic reductions in the prices of agricultural products. The consequent reduction of farmers' purchasing power was, in turn, an important factor in industrial depression. Thus, difficulties peculiar to industry and to agriculture in their interaction were heavily depressive influences on the economy.

#### 4. THE PRICE SYSTEM

There is evidence that the system of prices in Germany during the post-inflation period—especially as reflected in commodity prices, wages and stock prices—has been characterized by much the same cyclical pattern as have other aspects of the

economy. This pattern has been evident not only in prices subject to the influence of competing market factors but also in those subject to regulation by public and private organizations—namely, in the prices of certain industrial commodities and in wages.

Regulation of prices, particularly by industrial associations, is far-flung and includes such important commodities as coal, iron and steel products, phosphates, chemicals, paper, glass, cement, porcelain and electrical equipment. The extent to which price fluctuations are checked by the process of price fixing is difficult to judge. It has been estimated that in recent years regulation has applied to at least fifty per cent of the commodity price system and to ninety per cent of the wage system.<sup>44</sup> This rigidity is lessened by the widespread practice of granting rebates. Relatively high sensitivity to changes in general business conditions and absence of monopolistic fixation are manifest in the prices of agricultural commodities, textiles, hides and imported goods.

The movements of the general index of wholesale prices<sup>45</sup> from the beginning of 1924 to the end

<sup>44</sup> Ernst Wagemann, *Einführung in die Konjunkturlehre* (Quelle & Meyer, Leipzig, 1929), p. 63.

<sup>45</sup> The general index (prepared by the Statistisches Reichsamt) is a weighted arithmetic mean of relative prices on the base, 1913 = 100. It includes about 800 price quotations relating to some 400 agricultural commodities, industrial raw materials and finished products (see Chart 1).

of 1929 were within rather narrow limits. During most of this period its fluctuations were between 132 and 144 per cent of the 1913 average. This was largely a manifestation of the relative stability of raw materials and of semi-finished goods, which are subject to considerable regulation. However, the indexes for the prices of agricultural products and finished goods show relatively wide fluctuations.<sup>46</sup> Despite these differences in amplitude, there is similarity in the cyclical movement of the commodity price groups during the period 1924-29. After the beginning of 1930 all price indexes show accelerating decline of wide amplitude.<sup>47</sup>

In general, commodity prices sank during the period of depression and uncertainty of the first half of 1924, but rose towards the end of that year and during most of 1925. A downward movement set in again late in 1925 and early in 1926 but soon gave way to another rise, beginning, in the case of agricultural products, in the spring of 1926, and in the case of raw materials and manufactured goods, in the spring of 1927. The advance was continued, or a relatively stable level was maintained, until late in 1928 and early in 1929, when a long downward sweep began. The decline was especially steep in the latter half of 1931: the general index fell approxi-

<sup>46</sup> Compared with the price relationship of 1913, agricultural prices since the stabilization have been continuously at a disparity with the prices of non-agricultural commodities. This has made for a shift in the distribution of national income, to the disadvantage of agriculture.

<sup>47</sup> See Chart 1.



mately 40 per cent from March 1929 to January 1932, nearly 12 per cent of this fall occurring during the last six months of 1931. Commodity prices continued to fall during 1932, although more gradually, and attained a fairly stable level early in 1933. Marked severity of decline is apparent in the prices of agricultural products and raw materials; during the later period of depression, however, 'regulated' prices also dropped sharply.

The fluctuations of 'tariff' wages<sup>48</sup>—the only available quotations indicative of the prices of labor services—display a similar pattern. In 1924 and 1925 regulated wage rates advanced rapidly. After a period of relative stability in 1926 (when the business recession reflected itself in a cessation of advance in wages rather than in absolute decline), another rise began, which continued until about the end of 1929. For about a year thereafter wages changed little, but in 1931 a sharp drop occurred, followed by a continuous gradual decline in 1932.

Comparison of the cyclical amplitudes of individual prices and price groups subject to regulation with those of 'free' prices and price groups shows that the movements of the former were quite stable during the years 1924-30 whereas the latter fluctuated violently. In fact, there is evidence that the

<sup>48</sup> "Wage rates in Germany are governed in large part by a complex network of legally binding agreements, usually territorial within each industry, which are made between the unions on the one side and the employers, or more commonly the employers' associations, on the other." Angell, *The Recovery of Germany*, p. 273.

cyclical swings of unregulated prices were more pronounced than before the War.<sup>49</sup> It would seem quite possible, as has been suggested, that regulation of particular commodity prices and of wages may have led to an aggravation of the cyclical movements in non-regulated prices and in physical quantities, such as employment.<sup>50</sup> However, such influence as price regulation may have exerted until 1930 was largely diminished in later years, particularly after the middle of 1931, when the overwhelming force of world depression made itself felt in abrupt declines in all commodity prices and in wages.

## 5. EMPLOYMENT

Mature capitalistic countries have long suffered from cyclical fluctuations in employment. The increase in unemployment is one of the most serious consequences of business depression in general, and stress is often laid upon the need for 'stabilization' as a means of allaying this disturbance of economic life.

In Germany since 1924, however, the black shadow of a vast army of jobless people has darkened not only the periods of general depression but also periods that might otherwise be called 'prosperous'. Between 1924 and 1928 German economy no doubt effected a substantial recovery, measured

<sup>49</sup> See Ch. III, Sec. 3, d.

<sup>50</sup> See Ernst Wagemann, *Einführung in die Konjunkturlehre*, pp. 63-6.

in terms of production and trade, from the difficulties accompanying inflation. But a national economy that year after year was incapable of assuring all that full employment means to each of its willing workers should not have been sweepingly characterized as 'rehabilitated'.

During most of the inflation period unemployment was relatively slight. Only during 1923 did it assume really severe proportions. By the beginning of the post-stabilization period—that is, the winter of 1923-24—about one-fourth of all trade union members were without work. In the succeeding years, 1924-32, unemployment figures almost always indicate highly unfavorable conditions in the labor market.<sup>51</sup> This was especially pronounced during the winter months—labor was very sensitive to seasonal influences. During the one hundred and nine months from April 1924 to April 1933 the total reported number of unemployed workers fell below 500,000 in only four months, fluctuating between 500,000 and 1,000,000 in twenty months, between 1,000,000 and 3,000,000 during forty-nine months, and rising to between 3,000,000 and 6,200,000 during another thirty-six months.<sup>52</sup>

<sup>51</sup> See Chart 1.

<sup>52</sup> These figures represent only the extent of unemployment as announced by the labor exchanges. During the recession and depression of 1928-32, however, the incentive for jobless workers to report to the exchanges was much reduced. This was a consequence of the growing restrictions on unemployment benefits and of the declining probability of securing employment through the governmental agencies. There was, then, a steady increase in the number of unemployed not

The labor market was, indeed, sensitive to cyclical fluctuations. The periods of industrial revival and high business activity—that is, 1924–25 and 1927–28—were characterized by steady increases in employment. Likewise in recession and depression periods, particularly in that of 1928–32, employment fell to very low levels. The amplitudes of these cyclical fluctuations were very wide.

But, as indicated above, a wide underlying stratum of unemployment was chronic throughout the years 1924–33, even during the periods of relative prosperity. The trend of industrial production was definitely upward from 1924 to 1928, but the trend of unemployment did not decline. Rather, it appears to have risen too. This may be attributed partly to the production of more goods with fewer workers than formerly.

The steps taken by German industry soon after the currency stabilization for the purpose of reducing costs of operation included a considerable reduction of working staffs. According to estimates made by the Statistisches Reichsamt, at least two million workers were set free by this 'rationalization' movement alone between 1925 and 1930.<sup>53</sup> Improvement in industrial technique and organization has often led to a rise in unemployment, but

included in the official statistics. The *Institut für Konjunkturforschung* estimated that such 'invisible' unemployment comprised approximately 1,500,000 persons in the middle of 1932.

<sup>53</sup> Quoted in *Wirtschaftslage, Kapitalbildung, Finanzen* (Allgemeiner Deutscher Gewerkschaftsbund, Berlin, 1930), p. 10.

the rationalization effected so thoroughly and quickly after stabilization overloaded the labor market to an extraordinary degree.

However, factors other than the rationalization of industry also made for chronic unemployment in the post-inflation period. Large numbers of young men and women, born before the War at a time of an especially high birth-rate, came to maturity during the years 1924-31 and so were added to those seeking work. Furthermore, the War and the inflation led to increases in the industrial working population from such unusual causes as immigration from the ceded German territories, the reduction of the army and navy, the impoverishment of many persons who had formerly lived on pensions and interest incomes. Calculations of the Institut für Konjunkturforschung indicate that the number of persons eligible for gainful employment during the years 1926-30, in thousands, was as follows: <sup>64</sup>

BEGINNING OF YEAR	TOTAL OVER 18 YEARS OF AGE	CHANGE DURING YEAR
1926	28,301	+503
1927	28,804	+466
1928	29,270	+437
1929	29,707	+360
1930	30,067	+404

Thus, from the end of 1925 to the beginning of 1930 the working population increased nearly two million. If the estimate that the process of rational-

<sup>64</sup> Quoted in the *Report of the Agent General for Reparation Payments*, May 27, 1930, p. 297.

ization added two million to the total of unemployed is accepted, it is apparent that it was desirable during this period to provide employment for roughly four million workers. A comparison of the unemployment figures for 1925 and 1929 would indicate that most of these workers did find employment. That is, the growing productivity of Germany actually prevented unemployment from rising to even higher levels.

Furthermore, it is believed that the years 1933-36 will be characterized by an absolute reduction in the number of those seeking employment. The Institut für Konjunkturforschung has estimated that during those four years the year-to-year increase in working population will give way to decrease—a reflection of the low birth-rate during the World War. This should for a time tend to reduce unemployment. However, the ability of the economy to absorb the nation's labor power will determine the actual level of unemployment.

ESTIMATE OF FUTURE WORKING POPULATION <sup>1</sup> (in thousands)

BEGINNING OF YEAR	TOTAL OVER 18 YEARS OF AGE	CHANGE DURING YEAR
1930	30,067	+404
1931	30,471	+358
1932	30,829	+406
1933	31,235	-20
1934	31,215	-147
1935	31,068	-200
1936	30,868	-169
1937	30,699	+78
1938	30,772	+341

<sup>1</sup> *Ibid.*, p. 297.

Thus, the acute problem of unemployment in Germany during the years 1924-33 was more than a reflection of sharp cyclical fluctuations. The cyclical movements of unemployment were superimposed upon a deep stratum of unemployment that was present throughout this period. The basically high level of unemployment seems to have been largely the result of structural changes, particularly in population and in industrial technique and organization. However, it is likely that these 'structural factors' will become less important in the decade 1930-40.

## 6. FOREIGN TRADE AND THE BALANCE OF INTERNATIONAL PAYMENTS

During the seven years, 1924-30 inclusive, Germany's foreign indebtedness grew to something over 28 milliard Reichsmarks. German investments abroad amounted to 9.7 milliard. The net inflow of capital therefore was approximately 18 milliard Reichsmarks. At the same time, German economy received 4 milliard for services, shipping, etc.; paid interest of 2.5 milliard upon its commercial debts; increased its holdings of gold and foreign exchange by 2.1 milliard; made reparation payments to the extent of 10.3 milliard, and paid for a surplus of imports over exports amounting to 6.3 milliard.

Table 5 may give some idea of the role of capital

TABLE 5  
GERMANY'S BALANCE OF INTERNATIONAL PAYMENTS, 1924-1932<sup>1</sup>  
(in millions of Reichsmarks)

	1924	1925	1926	1927	1928	1929	1930	1931	1932
<i>Income</i>									
Capital inflow	3669	3222	1641	4646	6958	4459	3678	3817	729
Commodity exports	7810	9546	10677	11118	12627	13632	12175	9733	5814
Services (shipping, insurance trade, reparation services, etc.) <sup>2</sup>	274	462	532	645	672	712	538	436	339
Gold exports		476	56	574		510	192	1653 <sup>3</sup>	256 <sup>4</sup>
Interest income	325	320	340	335	382	400	400	300	200
<b>Total</b>	<b>12078</b>	<b>14026</b>	<b>13246</b>	<b>17318</b>	<b>20639</b>	<b>19713</b>	<b>16983</b>	<b>15939</b>	<b>7338</b>
<i>Outgo</i>									
Capital outflow	750	87	1034	854	2852	1991	3195	6494	1299
Commodity imports	9626	11990	9884	14078	13912	13676	10617	6955	4777
Reparation payments	281	1057	1191	1584	1999	2501	1699	990	162
Gold imports	1255	566	624	122	931	345	72		
Interest expense	166	326	513	680	945	1200	1400	1500	1100
<b>Total</b>	<b>12078</b>	<b>14026</b>	<b>13246</b>	<b>17318</b>	<b>20639</b>	<b>19713</b>	<b>16983</b>	<b>15939</b>	<b>7338</b>

<sup>1</sup> Years 1924-25, *Statistisches Jahrbuch*, 1931, pp. 534-5; years 1926-32, *Statistisches Jahrbuch*, 1933, pp. 498-9.

<sup>2</sup> Surplus of services.

<sup>3</sup> Export surplus.



imports in Germany's international balance of payments. During the period of large net capital imports, that is, from the beginning of 1924 to the end of 1929, the commodity import balance was on the whole very large. Only in the early part of 1926—a time of depression—and in the last months of 1929 was there an export surplus. From 1930 to 1933 an export balance was persistent.

Before the War, when the international financial position of Germany was strong, its foreign trade was characterized by an import surplus. In the period 1908-13 this amounted to an annual average of about 1,400 million marks. Its surplus income from foreign investments and services enabled it not only to pay for a surplus of imports over exports but also to invest more funds abroad. However, in the post-inflation years of recovery (when the income from foreign investments was practically gone) a large inflow of foreign loans balanced the trade deficit and reparation payments.

The fluctuations in the volume of commodities imported, especially raw materials, reflected quite closely the changes in general internal economic conditions. This relationship between imports and domestic economy is to be explained largely by the dependence of German industry upon foreign sources for essential raw materials.

Fluctuations in exports must be explained on a different basis. The sudden rise in exports during the depression of early 1926 undoubtedly reflected

a certain amount of necessitous selling and proved to be merely a temporary exaggeration of the gradual tendency of exports to increase. That exports showed no tendency to decline at this time is also an indication of the essentially local nature of the German recession and depression of 1925-26. From that time until the autumn of 1927, German economy was passing from depression to great business activity, and a quickened domestic market gave German merchants little incentive to seek out new foreign markets. From the later months of 1927 until the autumn of 1929 exports expanded quite continuously. The diminution of business at home, together with the greater exporting capacity derived from large production, encouraged the development of export trade. Such an expansion was made possible by the increased power of foreign markets to buy—reflection of the economic activity prevailing in many countries. In the years 1930-32, with the advent of world-wide depression, export opportunities became fewer, and German sales abroad declined. Resistance to German goods in world markets became increasingly pronounced during 1932 and early 1933, largely as a result of rising trade barriers and increasing competition from countries with depreciated currencies. However, owing to a combination of circumstances peculiar to the depression, Germany's *surplus* of exports over imports was large during 1930-32. Prices of raw materials in world markets fell relatively more than prices of

finished goods. This price differential was of great advantage to German exporting manufacturers, who doubtless made strenuous efforts to maintain their sales in foreign markets. Furthermore, the severity of the depression in Germany drastically reduced the demand for goods from abroad. The surplus in the three years 1930-32 from commodity exports and services to foreigners, estimated to total nearly 6.7 milliard Reichsmarks, was thus largely a concomitant of depressive circumstances.

CHAPTER THREE

STATISTICAL ANALYSIS OF CYCLICAL  
FLUCTUATIONS IN SELECTED TIME  
SERIES, 1924-1933

ECONOMIC life is thoroughly dynamic. Population grows and shrinks, wealth is accumulated and dissipated, markets are conquered and lost, fashions and technique change. The volume and prices of business transactions vary from hour to hour, from day to day; they vary every week and every month. Economic life is subject to continuous modifications that occur in most diverse manners.

It might appear that the confusing complexity of economic changes could give no general impression except that of unordered aberrations. However, after careful consideration, the details fade and certain broad categories define themselves. The consequent classification justifies itself in that it provides a working basis for further study.

A chart illustrating the changes in some aspect of economic life over a considerable period of time, for

example, pig-iron production during twenty years, would probably reveal several sorts of fluctuation. Steady growth of population and wealth might induce continual increase in the annual production of iron. The iron industry would be obliged to expand productive capacity. It would be subject to continuous structural change, and the chart of pig-iron production would show a *secular movement*. Again, it is conceivable that a physical calamity, such as an earthquake, might lead to the destruction of a plant and to a sudden decrease in production. An abrupt structural change would be imposed upon the industry, and the chart would show a *random perturbation*. Also, it is possible that there might be a pronounced tendency, year after year, for production to rise during the winter and to decline during the summer. That is, pig-iron production would be subject to *seasonal fluctuations*. Further, the chart might reveal a wave-like movement not characterized by the periodic regularity of the seasonal changes—an alternation of 'boom' and 'dull' periods, each lasting from several months to several years. Pig-iron output would be characterized by *cyclical fluctuations*.<sup>1</sup>

The variety of changes here illustrated is apparent in many aspects of economic activity. These types of

<sup>1</sup> It is possible, of course, that examination of a period longer than twenty years might lead to the discovery of longer rhythmic fluctuations, 'long cycles'.

economic mutation, then, may be classified as follows:

*Secular movements*: relatively continuous changes involving no sudden alteration in development but rather a gradual structural modification—growth, decline, extension, regression.

*Random perturbations*: changes involving a relatively abrupt modification of structure, or of the course of development—conventionally called ‘irregular’, ‘random’, or ‘accidental’.

*Seasonal variations*: changes recurring fairly regularly every year and having their origin in the distribution of economic activities according to particular hours, days, weeks, months or seasons, because of climatic conditions, customs, institutions, regulations.

*Cyclical fluctuations*: “recurrences of rise and decline in activity, affecting most of the economic processes of communities with well-developed business organization, not divisible into waves of amplitudes nearly equal to their own, and averaging in communities at different stages of economic development from about three to about six or seven years in duration.” *Business cycles* are “congeries of cyclical fluctuations in a large number of economic activities, fluctuations which differ widely in amplitude and considerably in timing.”<sup>2</sup>

It must be recognized that all economic changes

<sup>2</sup> W. C. Mitchell, *Business Cycles: The Problem and Its Setting* (National Bureau of Economic Research, 1927) pp. 468, 309.

are interacting and that a study of business cycles must have frequent reference to various preceding or concurrent non-cyclical fluctuations. Indeed, it is probable that intimate functional relationships exist between the various modifications and fluctuations of an economy.

A type of recurrent rise and decline in many economic activities is the most obvious aspect of cyclical fluctuations. That is, business cycles are aggregations of rhythms of expansion and contraction in individual elements of an economy. Accurate characterization of business cycles, then, must be based upon description of the cyclical fluctuations apparent in representative economic time series. The vague terms of qualitative description must be made precise by measuring the duration of cyclical phases in particular series, the extent and intensity of their swings through expansion and contraction, and the specific pattern of their movements in the various phases. Further, the cycles in each series (which may be called 'specific cycles') must be compared with concurrent cycles in other series and with cycles in other periods of time.

The present aim is to arrive at concise statistical characterization of cyclical movements in series representative of such significant aspects of the German economy as industrial and agricultural production, commodity and security prices, the capital and credit system, domestic and foreign trade, business enterprise and employment. Finally, summar-

zation of the cyclical behavior of major groups in the economic process should make possible further generalization in respect of the course and peculiarities of the business cycle here studied. Obviously, limitations of time, space and data prevent the measurement of cycles in all, or even very many, economic activities. Selection of what are considered to be adequately representative series must be made. Such limitations must give caution to final generalizations.

## 1. THE TECHNIQUE OF MEASURING CYCLICAL BEHAVIOR

Before the present study was undertaken, the National Bureau of Economic Research had developed a method for determining the cyclical behavior of economic processes and had applied it to several hundreds of time series from the United States, Great Britain, France and Germany.<sup>3</sup> This method has been used for purposes of the present analysis. The procedure is briefly as follows:

When a given time series is taken up for analysis, it is first examined to see whether it reveals cyclical alternations of expansion and contraction. Practically all of the German series available show such

<sup>3</sup> See *Recent Economic Changes* (National Bureau of Economic Research, 1929), II, 890-909; and *Encyclopedia of the Social Sciences* (New York, 1930), Vol. 3, article on Business Cycles, pp. 92-106.



alternations. A series that shows these cyclical characteristics is corrected for seasonal variations, if any appear, and is then broken into segments on the basis of its successive cyclical low points. These segments, which cover a cyclical movement in one series from a low to a high and back to a low, are called the 'specific cycles' of the series, to differentiate them from cycles in general business activity.

Next, the average value of the series during each specific cycle is computed. The values of the original data (corrected for seasonal variations) at the specific low and high points are turned into relatives on the basis of the above average as 100. Further, in order to gain a clear view of the cyclical behavior of different series not merely at their high and low points but also during their phases of expansion and contraction, the patterns are elaborated by taking observations at six other points of each cycle. In order to see what happens during expansion the interval between the initial low point of each cycle and the high point is broken into thirds, the average values of the original data in each of these thirds are computed, and these averages are also turned into relatives of the average value of the specific cycle. The results indicate whether the series rises rapidly from its trough and then continues to advance more slowly; whether it is slow in getting started and then mounts rapidly; whether it rises at a fairly uniform rate or whether the advance is checked and then resumed. Similarly, the period from the high

point of the cycle to the terminal low is broken into thirds, for each of which an average value is determined and then converted into a relative of the cycle average. Thus each specific cycle apparent in a series is turned into a nine-point 'cyclical pattern', which can be compared with other 'cyclical patterns' in any manner that the investigation may suggest.

This procedure eliminates that part of the secular trend which is represented by the change in average value from one cycle to the next. But the 'intra-cycle' trend, as that portion which falls within the limits of one cycle may be called, is retained in the relatives.

The cyclical pattern then shows the average standing of the series during the three months centered on the date of its upturn; its average standings during successive thirds of its period of expansion; its average standing during the three months centered on the date of its downturn; its average standing during the three successive stages of its period of contraction; and finally, its average standing during the three months centered on the date of the upturn that begins the next cycle. All the average standings are in terms of relatives to the average value of the series during a specific cycle, after seasonal variations have been eliminated. The relatives make possible measurement of amplitudes of expansion and contraction in comparable terms for various series.

As indicated above, a business cycle is an aggre-

gation of specific cycles running concurrently in a preponderant number of economic activities of a country. But the agreement in time between the cyclical fluctuations of different series is not close. Indeed, one of the most significant features of business cycles is the chronological sequence in which different activities reach the peaks of their specific cycles and decline, or reach the troughs of their specific cycles and rise. To investigate this order it is necessary to supplement the patterns of specific cycles by a second set of patterns based upon a uniform chronology. The chronology most appropriate is that indicated by the cyclical turning points in the cycles of business activity at large.

Accordingly, a set of 'reference dates' is selected to mark as nearly as possible the months and years in which general business activity in Germany experienced successive revivals and recessions.<sup>4</sup> The reference dates are fixed by a critical study both of business annals, drawn from commercial journals and similar sources, and of the specific cycles of whatever statistical series are available. No great precision can be claimed for the reference dates, both because the materials available for fixing them in successive decades vary in character and because business revivals and recessions are not single events occurring at a point in time, but processes that

<sup>4</sup>'Revival' is the period when most economic activities have ceased to contract and begin to turn up; 'recession' is the period when they have ceased to expand and begin to turn down.

begin in some part of the business system and take months, usually more than a year, to run their full course. To date one of these turns by a single month is therefore arbitrary. The aim is to fix upon the months in which changes in the direction of business developments from expansion to contraction, or from contraction to expansion, had become general. A time-scale to record the sequence in which the specific cycles of different business factors make their cyclical turns is necessary. The reference dates serve that purpose, however they may be fixed.

The statistical series to be analyzed is now broken up into a new set of cyclical segments. The first set—the specific-cycle segments—was fixed by the successive cyclical lows and highs found in the series itself. The new set—the reference-cycle segments—is fixed by the successive cyclical lows and highs as established for general business activity. In most series a one-to-one correspondence between specific cycles and reference cycles is found, together with a fairly regular lead or lag of the specific revivals and recessions in comparison with the reference revivals and recessions. Other series show similar correspondence during much of the time, but now and then have an extra specific cycle or skip a reference cycle. A few series show no systematic relationship in time between their specific and reference cycles.

With the reference-cycle segments as a basis, a new set of nine-point relatives freed from seasonal variations is computed, with the average value of the

original data (corrected for seasonal variations) during each reference cycle as 100. Thus a nine-point 'reference-cycle' pattern is obtained.<sup>5</sup> This makes possible computation of a set of three indexes of conformity of series to the 'reference-cycle' pattern.

(1) If a series shows a net rise during the reference-cycle expansion, it is said to have positive conformity in expansion: +. If the reverse is true, it is said to have negative conformity: -. (2) Similarly, agreement or disagreement of the series with the reference-cycle contraction is indicated as + or -. (3) In some series there may be a rise or a fall throughout both reference-cycle periods. If in such a case a rise in expansion exceeds a rise in contraction, or a fall in expansion is less than a fall in contraction, the index is +. If, on the other hand, there is a rise in expansion less than a rise in contraction, or a fall in expansion greater than a fall in contraction, the index is -.

The cyclical behavior of each series can now be statistically described in respect of its (1) specific amplitude, duration and turning points; and (2) conformity to, or difference from, the fluctuations in general business, with respect to turning points and movement during expansion and contraction periods.<sup>6</sup>

<sup>5</sup>It should be emphasized that this reference-cycle pattern, except for the timing of the cyclical segments, is obtained with the data of the original series in the same way as the specific-cycle pattern.

<sup>6</sup>The method described above has reference to analysis of monthly data, in which form most of the series are expressed. Analysis of

## 2. COMPARISON OF CYCLICAL FLUCTUATIONS IN GERMAN ECONOMY DURING PRE-WAR AND POST-INFLATION PERIODS

A statistical study of the post-inflation cycles in German economy may well begin with a comparison of various manifestations of such cycles with pre-War cyclical experience. There is reason to believe that such a study will indicate in broad outlines the respects in which the recent cycles are peculiar. That is, a comparison of the pre-War and post-inflation cyclical behavior of comparable series representative of many aspects of the economy should offer general answers to such questions as the following: Do the cyclical fluctuations, 1924-33, depart from average experience in their total duration and in the duration of their phases of expansion and contraction? Are there significant differences in the conformity of particular series to cyclical movements in general business, as between the pre-War and post-inflation periods? How closely grouped temporally are the cyclical turning points of the series (so-called 'high' and 'low' points) in the two periods? How does the extent of the cyclical upswings and downswings in

annual data is similar. There is, of course, no correction for seasonal variation. In the elaboration of specific-cycle and reference-cycle patterns there is only one observation each between low and high points, and between high and low points, instead of three observations each, as in the case of monthly data. This observation is a simple average of the annual values occurring between the turning points. Slight modifications in the technique of analysis are also necessary in the case of quarterly data.

the various post-inflation series compare with pre-War experience?

For this comparison, twenty monthly and quarterly series, eleven of which cover four or more pre-War cycles, have been selected. Most of these series are identical in both periods.<sup>7</sup> They are as follows:

Pig-iron production  
Coal production  
Coke production  
Vessels under construction (quarterly)

Wholesale price index  
Index of textile prices  
Stock price index

<sup>7</sup>In a few instances, however, it was not possible to secure identical series; cycles in similar series were then compared. Thus, the post-inflation series, 'volume of bills drawn', is compared with the pre-War series, 'bills of exchange tax'. The other instances of this sort are: a new index of wholesale prices of raw materials, agricultural and colonial products (1924-33) is compared with the Schmitz index of wholesale prices of raw materials, agricultural and colonial products (1879-1914); a stock price index based on prices of 329 representative stocks on the Berlin Exchange (1924-33) is compared with 'prices of listed securities', which is an average of the sum of prices of all securities listed on the Berlin Exchange (1904-14); Reichsbahn freight cars placed at the disposal of shippers (1924-33) is compared with Prussian-Hessian Railway cars loaded (1904-08) and cars loaded on all German railways (1908-14); Reichsbahn railway freight receipts (1924-33) is compared with freight earnings of the Prussian-Hessian Railway (1897-1907) and freight earnings on all German railways (1907-13); Reichsbahn passenger and baggage receipts (1924-33) is compared with earnings of the Prussian-Hessian Railway from passengers and baggage (1897-1913).

Reichsbank discount of bills  
Private bank discount rate  
Reichsbank discount rate  
Volume of bills drawn  
Freight car loadings  
Railway freight earnings  
Railway passenger earnings  
Reichsbank clearances

Value of imports (quarterly)  
Value of exports (quarterly)

Unemployment in trade unions  
Applicants for positions

Business failures

Although the above series seem to have considerable significance as reflections of the entire economy, more satisfactory conclusions might be possible if the sample of monthly data were more extensive. In the absence of further monthly data, it was decided that consideration of a sample of twenty-three representative annual series—however limited such series may be for purposes of studying cyclical fluctuations—could at least support the conclusions that might be drawn. These annual series, seventeen of which cover four or more pre-War cycles, are as follows:



Potassium-salts production  
Pig-steel production  
Sugar beets processed  
Zinc production  
Wheat crop  
Rye Crop  
Potato crop  
Hay crop

Wholesale price of rye  
Wholesale price of potatoes  
Wholesale price of wool  
Wholesale price of coal  
Wholesale price of pig iron  
Wholesale price of pork  
Wholesale price of lead

Money circulation  
Gold cover of money circulation  
Savings deposits surplus  
Loans and discounts, banks of issue

Railway freight traffic

Coal miners' wages

Organization of joint-stock companies  
Business failures

It should be pointed out that the following observations in respect of differences between average pre-War cyclical experience and the post-inflation cycles must be limited by the rather meager data available. However, only broader generalizations concerning such differences are made and it is believed that the representativeness of the series should make such generalizations relevant to the entire German economy.

*a. The Duration of Pre-War and Post-Inflation Cycles*

The qualitative description given in Chapter II indicates the approximate duration of phases in the two post-inflation business cycles to have been as follows:

- I. First cycle, 1924-26
  - Expansion: winter 1923-24 to spring 1925
  - Contraction: spring 1925 to spring 1926
- II. Second cycle, 1926-32
  - Expansion: spring 1926 to spring 1928
  - Contraction: spring 1928 to autumn 1932

As noted above, for purposes of cyclical analysis particular months have been selected as marking the turning points of these phases of expansion and contraction. These months are as follows:

Revival: December 1923  
Recession: April 1925  
Low: March 1926  
Revival: April 1926  
Recession: April 1928  
Low: August 1932

Most of the monthly series available show two specific cycles in the post-inflation period whose turning points agree fairly well with the first four dates and the last date selected. The high point and the final low point of the reference cycle, 1926-32, however, present some difficulty. The individual series show considerable difference in the precise dates of these turning points. But it appears that by the middle of spring, 1928, forces making for continuing general expansion had spent themselves. It would thus seem to be quite safe to select April to mark the beginning of general contraction. Furthermore, in late summer 1932 a transition from continuous cyclical decline to revival occurred (hesitant, to be sure) in significant aspects of the economy, particularly in industrial production, employment and security prices. August 1932, then, has been chosen as the final month of the general contraction.

Table 6 presents the National Bureau's selection of turning points of the German business cycles since 1879.

TABLE 6

REFERENCE DATES FOR BUSINESS CYCLES IN GERMANY  
1879-1932

Expansion			Contraction			Duration in months		
REVIVAL	HIGH		RECESSION	LOW		EX- PAN- SION	CON- TRAC- TION	FULL- CY- CLE
March 1879	Dec. 1879		Jan. 1880	Feb. 1881		10	14	24
March 1881	Jan. 1882		Feb. 1882	Aug. 1886		11	55	66
Sept. 1886	March 1890		April 1890	Feb. 1895		43	59	102
March 1895	March 1900		April 1900	March 1902		61	24	85
April 1902	July 1903		Aug. 1903	Feb. 1905		16	19	35
March 1905	July 1907		Aug. 1907	Oct. 1908		29	15	44
Nov. 1908	April 1913		May 1913	July 1914		54	15	69
Aug. 1914	June 1918		July 1918	June 1919		47	12	59
July 1919	May 1922		June 1922	Nov. 1923		35	18	53
Dec. 1923	March 1925		April 1925	March 1926		16	12	28
April 1926	March 1928		April 1928	Aug. 1932		24	53	77
AVERAGE DURATION:								
11 cycles, 1879 to 1932						31.4	26.9	58.3
3 cycles, 1902 to 1914						33.0	16.3	49.3

This temporal scheme, then, may be accepted, giving the first post-inflation business cycle a duration of 28 months, and the second, one of 77 months. During the 53 years, 1879-1932, there were eleven business cycles, with an average duration of approximately 58.3 months. Thus, the first post-inflation cycle had a duration considerably shorter than the average. Indeed, there was only one pre-War cycle of shorter duration, that of 1879-81. The second post-inflation cycle, on the other hand, was much longer than the average. Only two pre-War cycles, 1886-95, 1895-1902, were longer. These generali-

zations hold also if comparison be made with the three cycles immediately preceding the War, 1902-05, 1905-08, 1908-14.

The eleven cycles show an average expansion of approximately 31.4 months and an average contraction of 26.9 months. That is, during the entire period considered, the average duration of expansion was 54 per cent of the total duration of the cycles, and the average contraction, 46 per cent. Corresponding averages for the three cycles, 1902-05, 1905-08, 1908-14, are: expansion, 67 per cent, contraction, 33 per cent. The first post-inflation cycle shows the following relationship: expansion, 57 per cent, contraction, 43 per cent. Thus, this cycle does not depart essentially from pre-War experience, which indicated that, on the average, somewhat more than half the total duration of the cycle consisted of expansion. However, in the second post-inflation cycle the proportion is: expansion, 31 per cent, contraction, 69 per cent. In four pre-War cycles—1879-81, 1881-86, 1886-95, 1902-05—contraction lasted for more than half the total duration of the cycle; but in only one of these, 1881-86, was its duration more than 60 per cent of the total.

Thus, the duration of the two post-inflation business cycles departs most conspicuously from average experience in the shortness of the first cycle, 1924-26, in the length of the second cycle, 1926-32, and in its relatively long contraction phase.

*b. Conformity of Various Series to the Cyclical  
Reference-Pattern in Pre-War and Post-  
Inflation Periods*

It has been noted above that business cycles may be conceived of as aggregates of rhythms of expansion and contraction, of recurrences of rise and fall, in many individual economic activities, which vary in duration from two to seven years. They are given conceptual validity by the conformity of most activities in an economy to their temporal pattern. The larger the relative number of series exhibiting specific cycles that conform to the timing of a particular cycle in 'general business', the more precise, the more significant for the economy must such a cycle be.

The twenty monthly and quarterly series, and the twenty-three annual series, enumerated above, have been examined in order to measure the conformity of their behavior to the reference-cycle pattern as indicated in Table 6. Only if a series rises during a reference-cycle expansion and falls during the following reference-cycle contraction is it said to show complete conformity.<sup>8</sup> The method of deriving 'conformity' indexes is described more fully in the preceding section. The extent to which the forty-three monthly, quarterly and annual series conformed to

<sup>8</sup>If the series declines during a reference-cycle expansion and rises during the subsequent reference-cycle contraction, it is said to have inverse conformity. This is generally true of such series as unemployment and business failures.

TABLE 7

CONFORMITY OF VARIOUS SERIES TO REFERENCE CYCLES  
IN PRE-WAR AND POST-INFLATION PERIODS<sup>1</sup>

	CYCLE 1902-05	CYCLE 1905-08	CYCLE 1908-14	CYCLE 1923-26	CYCLE 1926-32
<i>Monthly and Quarterly Series</i>					
Number of series covering period of the cycle ..	16	19	20	19	20
Number of series showing					
Direct conformity ..	7	13	14	10	15
Inverse conformity ..	2	3	3	2	3
<i>Annual Series</i>					
Number of series covering period of the cycle ..	23	23	23	23	23
Number of series showing					
Direct conformity ..	3	12	15	8	13
Inverse conformity ..	6	4	1	2	2

<sup>1</sup>As is indicated in the table, not all of the forty-three series cover the period of each of the reference-cycles. Moreover, the number of series showing positive and negative conformity to the reference-cycle is not the same as the number of series covering the period of the cycle, because in each case there are some series that show no conformity.

the reference-cycles, April 1902—February 1905; March 1905—October 1908; November 1908—July 1914; December 1923—March 1926; April 1926—January 1932, is presented in Table 7.

A large proportion of the series in Table 7 conform to the three reference-cycles: March 1905—October 1908, November 1908—July 1914, and April 1926—August 1932. Smaller proportions conform to the two cycles: April 1902—February 1905, and December 1923—March 1926. Both monthly and annual series indicate differences in the conformity of the series from one cycle to another to be much the same. However, cyclical swings of short duration or of minor amplitude are often not reflected in series of annual data. In such series, whose individual yearly items are summations or averages of monthly or of quarterly data, short-run amplitudes are obscured. Thus only the wider cyclical swings are likely to be reflected in annual data. Moreover, even long-run cyclical swings tend to be obscured by annual series with a vigorous rising or falling secular trend. This may explain the fact that there are numerous annual series that do not conform to the relatively short cycles, 1902—05 and 1923—26.

Although all of the series conform to some of the three pre-War cycles and two post-inflation cycles of the reference-pattern, only two series (pig-iron production and freight car loadings) conform to all five cycles. One series, private bank discount rates, was not quoted in 1924 and part of 1925, but conforms to the three pre-War cycles and to the cycle 1926—32. Another series (unemployment in trade



unions) shows inverse conformity in both pre-War and post-inflation periods.

Three series (the index of prices of five textiles, Reichsbank discount of bills and the Reichsbank discount rate) conform to all three pre-War reference-cycles but not to both of the post-inflation cycles. Ten series (production of coal, coke, potassium salts and rye, index of wholesale prices, wholesale price of rye, volume of bills drawn, railway freight earnings, railway passenger earnings and value of imports) conform to the two post-inflation reference-cycles but not to all of the three pre-War reference-cycles. One series, applicants for positions, shows two inverted cycles in the pre-War period, 1902-14, and conforms negatively to the reference-cycles in the period 1924-32. The remaining twenty-five series fail to conform entirely to either all of the pre-War or all of the post-inflation reference-cycles.

Series of industrial production and domestic and foreign trade show, on the whole, close conformity to the reference pattern in both periods. Cycles in agricultural production series only occasionally run parallel to the cyclical course of general business. (Wheat crops showed but two cycles during the years 1902-14 and two cycles of erratic turning points in the period 1924-32; potato crops showed three erratic cycles during 1902-14, and three cycles during 1924-32; rye crops conformed to the reference cycles in the post-inflation period but showed three erratic cycles during 1902-14; hay crops

showed four cycles in the years 1902-14 and two erratic cycles in 1924-32.) Money and banking series tended to conform to the reference-pattern somewhat less in the post-inflation period than in the pre-War period. Prices of agricultural commodities and prices subject to regulation did not conform with regularity during either period.

Of course, the measure of conformity as described above is exacting. Many series characterized by a rising secular trend do not decline during every reference contraction period. Rather, their expansion is retarded. That is, in numerous series that show a rise throughout the period of the reference-cycle, their rate of rise in the expansion period may exceed their rate of rise in the contraction period.<sup>9</sup> If an alternation of acceleration and retardation of a rate of rise be recognized as a kind of conformity to the pattern of general business cycles, then the degree in which the forty-three series reflect all the cyclical movements of the reference-pattern is enlarged. Adding the series in which there is such variation in the rate of change to those in which there are alternating phases of actual rise and decline, it is found that the accepted reference-cycle pattern was evident in the following number of series:

<sup>9</sup> Conversely, in the case of many series that *fall* throughout a reference-cycle period the rate of fall in expansion may be less than the rate of fall in contraction.

REFERENCE-CYCLES	NUMBER OF SERIES COVERING PERIOD OF THE REFERENCE-CYCLE	NUMBER OF SERIES CONFORMING <sup>1</sup>
1902-1905	39	24
1905-1908	42	33
1908-1914	43	36
1923-1926	42	34
1926-1932	43	39

<sup>1</sup> The 'non-conforming' series are: reference-cycle 1902-05: vessels under construction, production of potassium salts, sugar beets processed, zinc production, wholesale price index, wholesale prices of rye, pork, lead and pig iron, volume of bills drawn, money circulation, gold cover of money circulation, savings deposits surplus, coal miners' wages, organization of joint-stock companies; reference-cycle 1905-08: zinc production, wheat, rye and hay crops, stock price index, wholesale prices of pork and coal, gold cover of money circulation, savings deposits surplus; reference-cycle 1908-14: stock price index, wholesale prices of rye, potatoes, wool and coal, gold cover of money circulation, loans and discounts of banks of issue; reference-cycle 1923-26: hay crop, wholesale prices of potatoes, wool, pig iron and coal, coal miners' wages, organization of joint-stock companies, business failures (annual series); reference-cycle 1926-32: hay crop, wholesale prices of potatoes and lead, Reichsbank discount rate. All but a few of these series are of an annual nature (see lists of series, Sec. 2, a).

Summing up the evidence, then, it may be said that conformity of the series to the first post-inflation reference-cycle, December 1923-March 1926, was more apparent than in the pre-War cycle, April 1902-February 1905, but it was relatively less pronounced than in the pre-War cycles, March 1905-October 1908 and November 1908-July 1914. This is probably accounted for by the rise followed by a short but sharp decline during the period of so-called 'halting revival' in the first half of 1924 in eleven of the series considered; and further by the short duration of the contraction phase of the cycle

and the consequent lack of evidence of contraction in many annual series. However, a relatively large proportion of the series conform to the second post-inflation cycle, April 1926—August 1932. This cycle was reflected more generally in the economic activities of Germany than was any pre-War cycle.

*c. Cyclical Turning Points in Pre-War and Post-Inflation Cycles*

The relative degree of 'scatter' of the specific cyclical turning points of a group of series about reference-cycle turning points is of interest inasmuch as it may give some indication of the representativeness of the reference-dates. That is, if, for instance, the 'high' points of a group of representative series are grouped closely about a reference-cycle 'high', there would seem to be reason to believe that the reference turning point has been well selected.

More than that, however, a measure of the dispersion of turning points of specific series in various cycles may further illuminate the characteristics of such cycles. Small dispersion might indicate that factors making for a change from expansion to contraction in the economy—or from contraction to expansion, as the case may be—impinged within narrow temporal limits upon many aspects of the economy, and that the resistances to the change were slight. On the other hand, a large degree of scatter might indicate that such factors operated slowly and that they were opposed by impulses acting towards a con-

tinuance of the prevailing direction of cyclical movement.

Questions to be answered here, then, are: How closely do the actual turning points of a representative group of time series conform to establish reference turning points in pre-War and post-inflation periods in German economy? How are these actual turning points distributed temporally?

For these purposes cyclical 'highs' and 'lows' of the same groups of 20 monthly and quarterly and 23 annual series considered above have been examined. Turning points of two monthly series, business failures and unemployment in trade unions, are not included in the measurements because they do not extend back beyond one pre-War cycle. The reference turning points selected for comparison are: the highs of March 1900, July 1903, July 1907, April 1913, March 1925 and March 1928; the lows of March 1902, February 1905, October 1908, March 1926 and August 1932. The low points of July 1914 and November 1923 are not included because of the lack of sufficient data to make measurements about these points reliable. Inasmuch as the annual series do not extend beyond 1932, the dispersion of their cyclical turning points about the reference low of 1932 has not been calculated.

Two measures of dispersion of the turning points have been derived: First, the mean deviation of the actual turning points (which are apparent) from each reference turning point, and second, the mean

deviation of the actual turning points from their own median turning point in each cyclical 'high' and 'low'.

TABLE 8a

RELATIVE DISPERSIONS OF SPECIFIC TURNING POINTS OF 18 MONTHLY AND QUARTERLY SERIES<sup>1</sup> REPRESENTATIVE OF PRE-WAR AND POST-INFLATION GERMAN ECONOMY

REFERENCE TURNING POINT	NUMBER OF SERIES SHOWING SPECIFIC TURNING POINT	MEAN DEVIATION FROM REFERENCE TURNING POINT (months)	MEAN DEVIATION FROM MEDIAN TURNING POINT (months)
High—March 1900	13	5.9	5.4
High—July 1903	10	11.8	8.8
High—July 1907	18	4.2	3.8
High—April 1913	13	9.2	8.8
<i>Average of mean deviations, four pre- War highs</i>		7.8	6.7
High—March 1925	14	3.9	3.5
High—March 1928	18	9.0	8.9
Low—March 1902	15	4.5	4.5
Low—February 1905	13	7.8	7.8
Low—October 1908	18	4.4	3.5
<i>Average of mean deviations, three pre- War lows</i>		5.6	5.3
Low—March 1926	17	4.6	4.4
Low—August 1932	14 <sup>2</sup>	4.3	4.3

<sup>1</sup> Three of the 18 series are not available for the years 1900-05, and one series for the years 1924-25. Such series, of course, do not appear in the calculations relating to the high and low points during those periods. Other series not included in the calculations show no change in cyclical direction during the period of the appropriate business

TABLE 8b

RELATIVE DISPERSIONS OF SPECIFIC TURNING POINTS OF  
23 ANNUAL SERIES REPRESENTATIVE OF PRE-WAR  
AND POST-INFLATION GERMAN ECONOMY<sup>1</sup>

REFERENCE TURNING POINT	NUMBER OF SERIES SHOWING SPECIFIC TURNING POINT	MEAN DEVIATION FROM REFERENCE TURNING POINT (years)	MEAN DEVIATION FROM MEDIAN TURNING POINT (years)
High-1900	20	1.2	1.2
High-1903	11	.8	.8
High-1907	20	.8	.8
High-1913	20	.5	.5
<i>Average of mean deviations, four pre- War highs</i>		.8	.8
High-1925	11	.5	.5
High-1928	19	.9	.8
Low-1902	19	.9	.9
Low-1905	13	.9	.9
Low-1908	20	1.2	1.2
<i>Average of mean deviations, three pre- War lows</i>		1.0	1.0
Low-1926	16	.7	.7

<sup>1</sup>Series not included in the calculations show no cyclical turning points during the period of the appropriate business cycle.

cycle. (Thus, in the case of the high points dispersed about March 1900, three series are excluded because they do not extend back so far, and two because they skip the high turning point of the reference-cycle.) This must be remembered in the comparison of the behavior of the series about reference and median turning points.

<sup>2</sup>The four remaining series in the group of 18 had not shown definite cyclical upturns at the time of writing (July 1933).

Tables 8a and 8b show little or no difference between deviations of turning points measured from reference points and from median points. On the basis of this relatively small sample of economic series, then, it may be said that the 'reference dates' for the periods 1900-13 and 1924-32 are adequately representative.

Moreover, the tables indicate that, in comparison with pre-War experience, the high points marking the end of expansion and the beginning of contraction in early 1925 were compactly grouped in time, that the low points marking the subsequent upturn in 1926 were fairly compact, that the high points in the cycle 1926-32 were conspicuously scattered. The meager evidence available indicates that the low points terminating the contraction of 1928-32 were also compact. These observations agree with conclusions arrived at above (Ch. II, Part A): namely, the recession of 1925 came suddenly and found slight resistance in the economy; the subsequent recovery was also swift and was almost immediately evident in many aspects of German economy; the downturn into the second post-inflation contraction became apparent in many series at widely separated times and thus was not clearly defined; and finally, a measure of recovery set in fairly quickly during the summer and autumn of 1932.



*d. The Amplitudes of  
Pre-War and Post-Inflation Cycles*

A further characterization, and a vivid one, can be drawn for the post-inflation cycles by comparing them with pre-War cyclical fluctuations in the extent of the upswings and downswings during expansion and contraction. For this purpose of comparing cyclical amplitudes Table 9 has been prepared, giving for each of the series admitting comparison:

1. The average amplitude of cyclical rise and fall, and of the total rise and fall, together with the average rise and fall per month (in the case of monthly series) or per year (in the case of annual series), of the specific cycles shown by each series during the entire pre-War period on record;
2. The amplitudes of cyclical rise and fall, and of the total rise and fall, together with the rise and fall per month or per year, of the specific cycles shown by each series during the period approximately delimited by the years 1900 and 1914;
3. The amplitudes of cyclical rise and fall, and of the total rise and fall, together with the rise and fall per month or per year, of the specific cycles shown by each series during the post-inflation period, 1924-32.

Table 9 relates to cyclical amplitudes of the forty-three series enumerated above. Twenty-eight of these series show four or more pre-War cycles. The table is arranged in four parts: Part A presents amplitudes of fifteen series that conform passably to the reference-cycles established for the period 1924-32. Part B presents the amplitudes of thirteen series, most of them annual, which show but one cycle in the period 1924-32. Parts C and D include respectively five series that underwent three or more cycles and ten series showing two non-conforming cycles in the period 1924-32. Inverted series—namely, business failures and unemployment—are indicated by the use of minus signs in the columns headed 'Rise' and 'Rise per month or year', and by plus signs in the columns headed 'Fall' and 'Fall per month or year'. The cyclical amplitudes are measured in percentages of the averages of the series during each specific cycle.

TABLE 9

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART A

CYCLES CONFORMING CLOSELY IN TIMING WITH THE  
STANDARD REFERENCE-CYCLES IN THE  
POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE AND FALL	RISE PER MONTH OR YEAR	FALL PER MONTH OR YEAR
	RISE	FALL			
<b>A. INDUSTRIAL AND AGRICULTURAL PRODUCTION</b>					
<b>1. Monthly and Quarterly Series</b>					
PRODUCTION OF PIG IRON					
Average of 6 pre-War cycles					
Aug. '81-June '14	+43.3	-14.5	57.8	+0.9	-1.2
Three pre-War cycles					
Nov. '01-Aug. '03-May '04	+31	-6	37	+1.4	-0.7
June '04-Apr. '07-Oct. '08	+27	-17	44	+0.8	-0.9
Nov. '08-July '13-June '14	+53	-8	61	+0.9	-0.7
Post-inflation cycles					
Oct. '23-June '25-Feb. '26	+108	-45	153	+5.4	-5.6
Mar. '26-Nov. '27-Aug. '32	+72	-115	187	+3.4	-2.0
PRODUCTION OF COAL					
Average of 4 pre-War cycles					
Apr. '02-Nov. '14	+25.2	-18.0	43.2	+0.9	-2.2
Four pre-War cycles					
Apr. '02-Mar. '04-July '04	+29	-11	40	+1.2	-2.8
Aug. '04-July '08-Jan. '09	+28	-10	38	+0.6	-1.7
Feb. '09-May '11-Oct. '11	+17	-8	25	+0.6	-1.6
Nov. '11-June '13-Nov. '14	+27	-43	70	+1.4	-2.5
Post-inflation cycles					
Aug. '23-Sept. '24-Jan. '26	+87	-10	97	+6.7	-0.6
Feb. '26-July '29-Mar. '32	+32	-52	84	+0.8	-1.6

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

## PART A

CYCLES CONFORMING CLOSELY IN TIMING WITH THE  
STANDARD REFERENCE-CYCLES IN THE  
POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
	RISE	FALL	RISE AND FALL	RISE PER MONTH OR YEAR	FALL PER MONTH OR YEAR
<b>PRODUCTION OF COKE</b>					
Average of 2 pre-War cycles					
Apr. '02-Aug. '14	+72	-38	110	+1.1	-4.7
Two pre-War cycles					
Apr. '02-Feb. '08-May '09	+90	-18	108	+1.3	-1.2
June '09-Jan. '14-Aug. '14	+54	-58	112	+1.0	-8.3
Post-inflation cycles					
Oct. '23-Nov. '24-Jan. '26	+93	-21	114	+7.2	-1.5
Feb. '26-Nov. '29-Apr. '32	+58	-78	136	+1.3	-2.7
<b>VESSELS UNDER CONSTRUCTION</b>					
Average of 5 pre-War cycles					
IVQ '95-IIQ '09	+58.8	-54.4	113.2	+3.9	-3.6
Three pre-War cycles					
IIQ '00-IQ '01-IVQ '03	+36	-70	106	+3.0	-2.1
IQ '04-IQ '06-IQ '07	+88	-41	129	+3.3	-3.4
IIQ '07-IVQ '07-IIQ '09	+38	-86	124	+4.2	-4.8
Post-inflation cycles					
IIIQ '23-IQ '25-IIIQ '26	+42	-96	138	+2.0	-5.3
IVQ '26-IIIQ '27-IIQ '33 <sup>1</sup>	+125	-191	316	+10.4	-2.8
<b>2. Annual Series</b>					
<b>PRODUCTION OF POTASSIUM SALTS</b>					
Average of 6 pre-War cycles					
1879-1915	+54.7	-21	75.8	+11.8	-11.8

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

## PART A

CYCLES CONFORMING CLOSELY IN TIMING WITH THE  
STANDARD REFERENCE-CYCLES IN THE  
POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE	RISE	FALL
			AND	PER	PER
	RISE	FALL	FALL	MONTH	MONTH
				OR	OR
				YEAR	YEAR
Two pre-War cycles					
1895-1901-1902	+82	-10	92	+13.7	-10
1902-1913-1915	+125	-72	197	+11.4	-36
Post-inflation cycles					
1924-1925-1926	+36	-21	57	+36	-21
1926-1929-1932 <sup>1</sup>	+35	-58	93	+11.7	-19.3
RYE CROPS					
Average of 9 pre-War cycles					
1880-1910	+17.5	-11	28.5	+9.7	-8.5
Two pre-War cycles					
1901-1904-1905	+21	-5	26	+7	-5
1905-1909-1910	+17	-9	26	+4.2	-9
Post-inflation cycles					
1924-1925-1926	+35	-25	60	+35	-25
1926-1927-1931	+28	-24	52	+14	-8
B. COMMODITY PRICES					
<i>Monthly Series</i>					
WHOLESALE PRICE INDEX					
Average of 6 pre-War cycles					
(Schmitz) Apr. '79-June '14	+22.2	-18.3	40.5	+0.9	-0.6
Three pre-War cycles					
Mar. '95-Aug. '00-July '04	+29	-16	45	+0.4	-0.3
Aug. '04-Sept. '07-Dec. '08	+26	-13	39	+0.7	-0.9
Jan. '09-May '12-June '14	+21	-8	29	+0.5	-0.3

<sup>1</sup> Tentative final low.

TABLE 9. (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART A

CYCLES CONFORMING CLOSELY IN TIMING WITH THE  
STANDARD REFERENCE-CYCLES IN THE  
POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE AND FALL	RISE PER MONTH OR YEAR	FALL PER MONTH OR YEAR
	RISE	FALL	FALL	MONTH OR YEAR	MONTH OR YEAR
Two post-inflation cycles					
July '24-Jan. '25-Apr. '26	+16	-12	28	+2.7	-0.8
May '26-June '28-Apr. '33	+10	-47	57	+0.4	-0.8
C. SECURITY PRICES					
<i>Monthly Series</i>					
STOCK PRICE INDEX					
Pre-War cycle					
Oct. '05-Aug. '07-Sept. '09	-9	+7	16	-0.4	+0.3
Post-inflation cycles					
June '24-Jan. '25-Dec. '25	+69	-61	130	+9.9	-5.5
Jan. '26-Apr. '27-June '32	+88	-103	191	+5.5	-1.7
D. DOMESTIC TRADE					
<i>Monthly Series</i>					
FREIGHT CAR LOADINGS					
Average of 2 pre-War cycles					
Feb. '05-Aug. '14	+44	-50.5	94.5	+0.9	-23.8
Pre-War cycles					
Feb. '05-Dec. '07-Dec. '08	+30	-7	37	+0.9	-0.6
Jan. '09-June '14-Aug. '14	+58	-94	152	+0.9	-47.0
Post-inflation cycles					
Jan. '24-Feb. '25-Jan. '26	+61	-12	73	+4.7	-1.1
Feb. '26-Feb. '28-Aug. '32	+30	-47	77	+1.2	-0.9
RAILWAY FREIGHT EARNINGS					
Average of 4 pre-War cycles					
July '97-Aug. '14	+37.5	-32.7	70.2	+1.1	-2.7

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

## PART A

CYCLES CONFORMING CLOSELY IN TIMING WITH THE  
STANDARD REFERENCE-CYCLES IN THE  
POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE AND FALL	RISE PER MONTH OR YEAR	FALL PER MONTH OR YEAR
	RISE	FALL	FALL	MONTH	MONTH
Three pre-War cycles					
Jan. '02-Feb. '04-Jan. '05	+45	-30	75	+1.7	-2.7
Feb. '05-June '07-Dec. '08	+28	-12	40	+1.0	-0.7
Jan. '09-Sept. '13-Aug. '14	+48	-73	121	+0.8	-6.6
Post-inflation cycles					
July '23-Feb. '25-Jan. '26	+115	-28	143	+6.1	-2.5
Feb. '26-July '29-Jan. '32	+46	-71	117	+1.1	-2.4
RAILWAY PASSENGER EARNINGS					
Average of 3 pre-War cycles					
Mar. '07-Mar. '09	+34	-15.7	49.7	+1.1	-1.1
Two pre-War cycles					
May '02-June '06-June '07	+41	-13	54	+0.8	-1.1
July '07-June '08-Mar. '09	+16	-12	28	+1.3	-1.3
Post-inflation cycles					
Aug. '23-June '25-June '26	+123	-26	149	+5.6	-2.2
July '26-May '29-Mar. '33 <sup>1</sup>	+27	-60	87	+0.8	-1.3
E. EMPLOYMENT AND WAGES					
<i>Monthly Series</i>					
UNEMPLOYMENT IN TRADE UNIONS					
One pre-War cycle					
Apr. '09-July '11-Aug. '14	-83	+787	870	-3.0	+21.5
Post-inflation cycles					
Nov. '23-May '25-June '26	-146	+166	312	-8.1	+12.8
July '26-Oct. '27-July '32	-94	+260	354	-5.9	+4.6
APPLICANTS FOR POSITIONS (MALE)					
Average of 2 pre-War cycles					
	-84.5	+60	144.5	-1.8	+2.7

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

## PART A

CYCLES CONFORMING CLOSELY IN TIMING WITH THE  
STANDARD REFERENCE-CYCLES IN THE  
POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE AND FALL	RISE PER MONTH OR YEAR	FALL PER MONTH OR YEAR
	RISE	FALL	FALL	MONTH	MONTH
<b>Two pre-War cycles</b>					
Feb. '02—Dec. '06—Dec. '08	-105	+90	195	-1.8	+3.8
Jan. '09—Dec. '11—Aug. '13	-64	+30	94	-1.8	+1.5
<b>Post-inflation cycles</b>					
Jan. '24—Feb. '25—May '26	-93	+160	253	-7.2	+10.7
June '26—Oct. '27—June '32	-52	+327	379	-3.1	+5.8
<b>F. BUSINESS ENTERPRISES</b>					
<i>Monthly Series</i>					
<b>BUSINESS FAILURES</b>					
<b>Pre-War cycle</b>					
Nov. '08—May '10—Apr. '13	-32	+49	81	-1.7	+1.4
<b>Post-inflation cycles</b>					
July '24—Mar. '25—Dec. '25	-51	+126	177	-6.4	+14.0
Jan. '26—Apr. '27—Sept. '31	-170	+173	343	-10.6	+3.3
<b>G. FOREIGN TRADE</b>					
<i>Quarterly Series</i>					
<b>VALUE OF IMPORTS</b>					
<b>Average of 2 pre-War cycles</b>					
1894—1908	+47	-19.5	66.5	+0.65	-1.95
<b>Two pre-War cycles</b>					
IIQ '94—IQ '00—IQ '01	+39	-15	54	+0.6	-1.2
IIQ '01—IVQ '07—IIIQ '08	+55	-24	79	+0.7	-2.7
<b>Post-inflation cycles</b>					
IIIQ '24—IIIQ '25—IQ '26	+11	-47	58	+0.9	-7.8
IIQ '26—IQ '28—IQ '33 <sup>1</sup>	+59	-106	165	+2.5	-1.8
<sup>1</sup> Tentative final low.					



TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART B

SERIES SHOWING ONE CYCLE IN THE POST-INFLATION  
PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE	RISE	FALL
			AND	PER	PER
	RISE	FALL	FALL	MONTH	MONTH
				OR	OR
				YEAR	YEAR
<b>A. INDUSTRIAL AND AGRICULTURAL PRODUCTION</b>					
<i>Annual Series</i>					
PRODUCTION OF PIG STEEL					
Average of 3 pre-War cycles					
1883-1915	+110.3	-19.0	129.3	+11.1	-12.5
Three pre-War cycles					
1883-1900-1901	+219	-9	228	+12.9	-9.0
1901-1907-1908	+59	-9	68	+9.8	-9.0
1908-1913-1915	+53	-39	92	+10.6	-19.5
One post-inflation cycle					
1923-1927-1932 <sup>1</sup>	+88	-93	181	+22.0	-18.6
SUGAR BEETS PROCESSED					
Average of 9 pre-War cycles					
1876-1911	+38.1	-29.3	67.4	+17.5	-26.4
Four pre-War cycles					
1898-1901-1902	+30	-36	66	+10	-36
1902-1903-1904	+13	-23	36	+13	-23
1904-1905-1908	+44	-31	75	+44	-10.3
1908-1910-1911	+32	-54	86	+16	-54
Post-inflation cycle					
1923-1930-1931	+80	-60	140	+11.4	-60.0
ZINC PRODUCTION					
Average of 3 pre-War cycles					
1889-1914	+24.7	-7.7	32.4	+2.7	-7.7

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART B

SERIES SHOWING ONE CYCLE IN THE POST-INFLATION  
PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE	RISE	FALL
			AND	PER	PER
	RISE	FALL	FALL	MONTH	MONTH
				OR	OR
				YEAR	YEAR
<b>Two pre-War cycles</b>					
1897-1898-1899	+2	-1	3	+2	-1
1899-1913-1914	+61	-21	82	+4.4	-21
<b>Post-inflation cycle</b>					
1924-1929-1932	+89	-81	170	+17.8	-27.0
<b>B. VOLUME AND COST OF CREDIT AND CAPITAL</b>					
<i>Annual Series</i>					
<b>MONEY CIRCULATION</b>					
<b>Average of 3 pre-War cycles</b>					
1888-1913-1914	+28.3	-1.3	39.6	+3.6	-1.3
<b>One pre-War cycle</b>					
1908-1913-1914	+15	-1	16	+3.0	-1.0
<b>Post-inflation cycle</b>					
1924-1929-1931	+47	-3	50	+9.4	-1.5
<b>SAVINGS DEPOSITS SURPLUS</b>					
<b>Average of 7 pre-War cycles</b>					
1881-1914	+68.3	-69.4	137.7	+36.7	-30.6
<b>Four pre-War cycles</b>					
1900-1901-1903	+86	-3	91	+86	-2.5
1903-1904-1907	+6	-101	107	+6	-33.7
1907-1909-1912	+135	-84	219	+67.5	-28.0
1912-1913-1914	+30	-96	126	+30	-96
<b>Post-inflation cycle</b>					
1924-1928-1931	+151	-375	526	+37.8	-125.0

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART B

SERIES SHOWING ONE CYCLE IN THE POST-INFLATION  
PERIOD

		AMPLITUDE OF CYCLICAL FLUCTUATIONS				
		RISE	FALL	FALL	RISE AND PER MONTH OR YEAR	FALL PER MONTH OR YEAR
<b>C. COMMODITY PRICES</b>						
<b>1. Monthly Series</b>						
INDEX OF PRICES OF FIVE TEXTILE COMMODITIES						
Average of 4 pre-War cycles						
Jan. '98—Nov. '11	+29.5	-23.5	53	+1.3	-1.4	
Three pre-War cycles						
Dec. '01—Jan. '04—Apr. '05	+31	-16	47	+1.2	-1.1	
May '05—Sept. '07—Oct. '08	+35	-33	68	+1.2	-2.5	
Nov. '09—Jan. '10—Nov. '11	+18	-13	31	+1.2	-0.6	
Post-inflation cycle						
Jan. '27—Sept. '27—Mar. '33 <sup>1</sup>	+17	-96	113	+2.1	-1.5	
<b>2. Annual Series</b>						
WHOLESALE PRICE OF WOOL						
Average of 4 pre-War cycles						
1894-1911	+22.2	-12.7	34.9	+9.2	-8.5	
Two pre-War cycles						
1901-1907-1908	+39	-11	50	+6.5	-11.0	
1908-1909-1911	+10	-6	16	+10.0	-3.0	
Post-inflation cycle						
1926-1928-1932 <sup>1</sup>	+23	-91	114	+11.5	-22.8	
WHOLESALE PRICE OF FIG IRON						
Average of 5 pre-War cycles						
1881-1914	+32.4	-32	64.7	+6.9	-13.5	
Two pre-War cycles						
1902-1907-1909	+28	-37	65	+5.6	-18.5	

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

## PART B.

SERIES SHOWING ONE CYCLE IN THE POST-INFLATION  
PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
	RISE	FALL	RISE AND FALL	RISE PER MONTH OR YEAR	FALL PER MONTH OR YEAR
1909-1913-1914	+28	-4	32	+7.0	-4.0
Post-inflation cycle					
1928-1930-1932 <sup>1</sup>	+2	-20	22	+1.0	-10.0
WHOLESALE PRICE OF COAL					
Average of 2 pre-War cycles					
1897-1910	+27	-5.5	32.5	+9.8	-1.8
Two pre-War cycles					
1897-1901-1906	+29	-6	35	+7.2	-1.2
1906-1908-1910	+25	-5	30	+12.5	-2.5
Post-inflation cycle					
1927-1929-1932 <sup>1</sup>	+8	-16	24	+4.0	-5.3
D. DOMESTIC TRADE					
<i>Monthly Series</i>					
REICHSBANK CLEARANCES					
Average of 5 pre-War cycles					
Oct. '86-Aug. '14	+51.2	-31.4	82.6	+1.4	-4.0
Two pre-War cycles					
Jan. '02-Nov. '07-Mar. '08	+61	-15	76	+0.9	-3.8
Apr. '08-Feb. '14-Aug. '14	+63	-75	138	+0.9	-12.5
Post-inflation cycle:					
Oct. '23-Apr. '29-Feb. '33 <sup>1</sup>	+161	-117	278	+2.4	-2.5
E. EMPLOYMENT AND WAGES					
<i>Annual Series</i>					
COAL MINERS' WAGES					
Average of 2 pre-War cycles					
1902-1914	+22	-6	28	+4.7	-3.7

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART B

SERIES SHOWING ONE CYCLE IN THE POST-INFLATION  
PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
	RISE	FALL	FALL	RISE	FALL
				AND	PER
				PER	PER
OR	OR				
YEAR	YEAR				
Two pre-War cycles					
1902-1907-1909	+25	-9	34	+5.0	-4.5
1909-1913-1914	+18	-3	21	+4.5	-3.0
Post-inflation cycle					
1924-1930-1932 <sup>1</sup>	+39	-25	64	+6.5	-12.5
<b>F. BUSINESS ENTERPRISES</b>					
<i>Annual Series</i>					
BUSINESS FAILURES					
Average of 4 pre-War cycles					
1892-1913	-10	+24.2	34.2	-5.9	+9.0
Two pre-War cycles					
1901-1905-1908	-12	+22	34	-3.0	+7.3
1908-1910-1913	-7	+18	25	-3.5	+6.0
Post-inflation cycle					
1926-1927-1931	-65	+78	143	-65	+19.5
<b>ORGANIZATION OF JOINT-STOCK COMPANIES</b>					
Average of 4 pre-War cycles					
1894-1914	+61.2	-57	118.2	+16	-25.6
Three pre-War cycles					
1903-1907-1908	+80	-38	118	+20	-38
1908-1910-1911	+21	-10	31	+10.5	-10
1911-1912-1914	+6	-38	44	+6.0	-19
Post-inflation cycle					
1926-1927-1932 <sup>1</sup>	+49	-106	155	+49.0	-21.2

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART C

SERIES SHOWING THREE OR MORE CYCLES IN THE  
POST-INFLATION PERIOD

		AMPLITUDE OF CYCLICAL FLUCTUATIONS				
		RISE		FALL		
		AND	PER	PER	PER	
RISE	FALL	FALL	MONTH	MONTH	MONTH	
		OR		OR		
		YEAR		YEAR		
<b>A. AGRICULTURAL PRODUCTION</b>						
<i>Annual Series</i>						
POTATO CROP						
Average of 8 pre-War cycles						
1879-1914	+28.5	-25.3	53.8	+15.5	-16.6	
Three pre-War cycles						
1904-1905-1906	+29	-13	42	+29	-13	
1906-1909-1911	+9	-28	37	+3	-14	
1911-1913-1914	+42	-18	60	+21	-18	
Post-inflation cycles						
1923-1925-1926	+26	-34	60	+13	-34	
1926-1928-1929	+30	-3	33	+15	-3	
1929-1930-1931	+16	-8	24	+16	-8	
<b>B. VOLUME AND COST OF CREDIT AND CAPITAL</b>						
1. <i>Annual Series</i>						
LOANS AND DISCOUNTS, BANKS OF ISSUE						
Average of 4 pre-War cycles						
1895-1913	+19.7	-9.2	28.9	+7.2	-5.6	
Three pre-War cycles						
1902-1903-1904	+7	-3	10	+7.0	-3.0	
1904-1907-1909	+25	-15	40	+8.3	-7.5	
1909-1912-1913	+23	-8	31	+7.7	-8.0	
Three post-inflation cycles						
1924-1925-1926	+37	-35	72	+37	-35	
1926-1927-1928	+23	-3	26	+23	-3	
1928-1929-1930	+5	-19	24	+5	-19	

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

## PART C

SERIES SHOWING THREE OR MORE CYCLES IN THE  
POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE	RISE	FALL
			AND	PER	PER
	RISE	FALL	FALL	MONTH	MONTH
		OR		OR	
		YEAR		YEAR	
<b>2. Monthly Series</b>					
REICHSBANK DISCOUNT OF BILLS					
Average of 9 pre-War cycles					
Apr. '79—Nov. '13	+43.0	-33.4	76.4	+1.7	-3.1
Three pre-War cycles					
May '02—Mar. '04—Nov. '04	+28	-26	54	+1.2	-3.2
Dec. '04—Nov. '07—Nov. '08	+49	-43	92	+1.4	-3.6
Dec. '08—Dec. '12—Nov. '13	+64	-60	124	+1.3	-5.5
Post-inflation cycles:					
Nov. '23—Nov. '24—July '26	+124	-74	198	+10.3	-3.7
Aug. '26—Oct. '27—Jan. '29	+68	-33	101	+4.5	-2.2
Feb. '29—July '29—Aug. '30	+41	-53	94	+8.2	-3.8
Sept. '30—Nov. '31—Dec. '32	+85	-60	145	+5.7	-4.6
<b>C. COMMODITY PRICES</b>					
<i>Annual Series</i>					
WHOLESALE PRICE OF RYE					
Average of 5 pre-War cycles					
1890-1913	+22.4	-23.2	45.6	+11.2	-11.3
Three pre-War cycles					
1901-1902-1903	+3	-9	12	+3.0	-9.0
1903-1907-1910	+38	-25	63	-25	-8.3
1910-1912-1913	+20	-13	33	-13	-13.0
Post-inflation cycles					
1924-1925-1926	+21	-6	27	+21.0	-6.0
1926-1927-1930	+29	-43	72	+29.0	-14.3
1930-1931-1932 <sup>1</sup>	+12	-3	15	+12.0	-3.0

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART C

SERIES SHOWING THREE OR MORE CYCLES IN THE  
POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE	RISE	FALL
	RISE	FALL	FALL	MONTH	MONTH
			AND	PER	PER
				OR	OR
				YEAR	YEAR
<b>D. DOMESTIC TRADE</b>					
<i>Monthly Series</i>					
VOLUME OF BILLS DRAWN (Bills of Exchange Tax)					
Average of 4 pre-War cycles					
Mar. '79-May '09	+39.2	-16.5	55.7	+0.5	-1.2
One pre-War cycle					
Apr. '02-Feb. '08-May '09	+47	-18	65	+0.7	-1.2
Post-inflation cycles					
Feb. '24-Sept. '25-July '26	+81	-51	132	+4.3	-5.1
Aug. '26-Nov. '28-May '31	+50	-51	108	+1.8	-1.7
June '31-Oct. '31-Feb. '33	+53	-55	108	+13.2	-3.2

PART D

SERIES SHOWING TWO CYCLES WITH ERRATIC TURNING  
POINTS IN THE POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE	RISE	FALL
	RISE	FALL	FALL	MONTH	MONTH
			AND	PER	PER
				OR	OR
				YEAR	YEAR
<b>A. AGRICULTURAL PRODUCTION</b>					
<i>Annual Series</i>					
WHEAT CROP					
Average of 9 pre-War cycles					
1881-1907	+18.2	-14.4	32.6	+15.7	-10.3
Three pre-War cycles					
1901-1902-1903	+43	-11	54	+43	-11
1903-1904-1905	+7	-3	10	+7	-3



TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART D

SERIES SHOWING TWO CYCLES WITH ERRATIC TURNING  
POINTS IN THE POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
	RISE	FALL	RISE RISE FALL		
			AND PER PER		FALL
			PER	MONTH	
OR	OR	OR	OR	OR	
	YEAR	YEAR	YEAR	YEAR	YEAR
1905-1906-1907	+7	-12	19	+7	-12
Two post-inflation cycles					
1924-1925-1926	+29	-22	51	+29	-22
1926-1928-1929	+39	-16	55	+19.5	-16
HAY CROP					
Average of 6 pre-War cycles					
1893-1911	+24.3	-18.3	42.6	+18.7	-16.7
Four pre-War cycles					
1901-1903-1904	+17	-21	38	+8.5	-21.0
1904-1906-1907	+28	-15	43	+14.0	-15.0
1907-1908-1909	+9	-20	29	+9.0	-20.0
1909-1910-1911	+26	-35	61	+26	-35
Post-inflation cycles					
1925-1927-1928	+6	-14	20	+3.0	-14.0
1928-1931-1932 <sup>1</sup>	+21	-1	22	+7.0	-1.0

B. VOLUME AND COST OF CREDIT AND CAPITAL

1. Monthly Series

REICHSBANK DISCOUNT RATE

Average of 8 pre-War cycles

Nov. '76-July '14	+59.0	-58.4	117.4	+3.9	-2.7
Three pre-War cycles					
Oct. '02-Oct. '04-Aug. '05	+31	-31	62	+1.2	-3.1
Sept. '05-Mar. '07-May '09	+65	-57	122	+3.4	-2.2
June '09-Sept. '13-July '14	+50	-42	92	+1.0	-4.2
Post-inflation cycles					
May '27-Oct. '29-Sept. '30	+39	-54	93	+1.3	-4.9
Oct. '30-Aug. '31-Apr. '33 <sup>1</sup>	+137	-137	274	+12.5	-6.8

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

PART D

SERIES SHOWING TWO CYCLES WITH ERRATIC TURNING  
POINTS IN THE POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE AND FALL	RISE PER MONTH OR YEAR	FALL PER MONTH OR YEAR
	RISE	FALL	FALL	MONTH OR YEAR	MONTH OR YEAR
<b>PRIVATE BANK DISCOUNT RATE</b>					
Average of 10 pre-War cycles					
Oct. '76-Apr. '14	+84.8	-83.6	168.4	+4.2	-4.7
Four pre-War cycles					
Aug. '02-Aug. '03-Mar. '05	+65	-57	122	+5.0	-3.0
Apr. '05-July '07-Nov. '08	+89	-89	178	+3.2	-5.6
Dec. '08-July '10-May '11	+55	-21	76	+2.8	-2.1
June '11-June '13-Apr. '14	+65	-79	144	+2.6	-7.9
Post-inflation cycles					
Jan. '27-Apr. '28-Aug. '30	+48	-65	113	+3.2	-2.3
Sept. '30-Sept. '31-Dec. '32	+86	-76	162	+6.6	-5.1
<b>2. Annual Series</b>					
<b>GOLD COVER OF MONEY CIRCULATION</b>					
Average of 8 pre-War cycles					
1882-1912	+5.5	-2.5	8.0	+2.9	-1.5
Four pre-War cycles					
1899-1902-1903	+8	-2	10	+2.7	-2.0
1903-1905-1907	+5	-1	6	+2.5	-0.5
1907-1908-1910	+3	-1	4	+3.0	-0.5
1910-1911-1912	+1	-2	3	+1.0	-2.0
Post-inflation cycles					
1925-1926-1927	+21	-6	27	+21	-6.0
1927-1930-1932 <sup>1</sup>	+28	-84	112	+9.3	-42.0

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

## PART D

SERIES SHOWING TWO CYCLES WITH ERRATIC TURNING  
POINTS IN THE POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
	RISE	FALL	FALL	RISE AND PER MONTH OR YEAR	FALL PER MONTH OR YEAR
<b>C. COMMODITY PRICES</b>					
<i>Annual Series</i>					
WHOLESALE PRICE OF POTATOES					
Average of 7 pre-War cycles					
1890-1913	+35.7	-31	66.7	+25.8	-17.6
Three pre-War cycles					
1902-1904-1906	+44	-47	91	+22.0	-23.5
1906-1908-1910	+42	-28	70	+21.0	-14.0
1910-1912-1913	+52	-29	81	+26.0	-29.0
Post-inflation cycles					
1925-1927-1930	+75	-90	165	+37.5	-30.0
1930-1931-1932 <sup>1</sup>	+5	-6	11	+5.0	-6.0
WHOLESALE PRICE OF PORK					
Average of 6 pre-War cycles					
1891-1914	+22.3	-19.5	41.8	+13.1	-11.6
Four pre-War cycles					
1899-1902-1904	+27	-20	47	+9	-10
1904-1906-1907	+29	-19	48	+14.5	-19
1907-1909-1911	+20	-20	40	+10	-10
1911-1912-1914	+25	-18	43	+25	-9
Post-inflation cycles					
1924-1926-1927	+16	-17	33	+8	-17
1927-1929-1932 <sup>1</sup>	+25	-56	81	+12.5	-18.7
WHOLESALE PRICE OF LEAD					
Average of 2 pre-War cycles					
1894-1910	+59	-48.5	107.5	+10.8	-20.3

<sup>1</sup> Tentative final low.

TABLE 9 (cont.)

AMPLITUDE OF SPECIFIC CYCLE FLUCTUATIONS IN GERMAN  
TIME SERIES DURING PRE-WAR AND POST-  
INFLATION CYCLES

## PART D

SERIES SHOWING TWO CYCLES WITH ERRATIC TURNING  
POINTS IN THE POST-INFLATION PERIOD

	AMPLITUDE OF CYCLICAL FLUCTUATIONS				
			RISE AND FALL	RISE PER MONTH OR YEAR	FALL PER MONTH OR YEAR
	RISE	FALL	FALL	MONTH OR YEAR	MONTH OR YEAR
Pre-War cycle					
1902-1907-1910	+58	-47	105	+11.6	-15.7
Post-inflation cycles					
1924-1925-1928	+16	-53	69	+16.0	-17.7
1928-1929-1932 <sup>1</sup>	+13	-88	101	+13.0	-29.3
<b>D. DOMESTIC TRADE</b>					
<i>Annual Series</i>					
<b>RAILWAY FREIGHT TRAFFIC</b>					
Average of 4 pre-War cycles					
1889-1914	+31.2	-6.5	37.7	+5.7	-6.5
Two pre-War cycles					
1901-1907-1908	+32	-1	33	+5.3	-1.0
1908-1913-1914	+33	-21	54	+6.6	-21.0
Post-inflation cycles					
1923-1927-1928	+59	-2	61	+14.8	-2.0
1928-1929-1932 <sup>1</sup>	+2	-53	55	+2.0	-17.7
<b>E. FOREIGN TRADE</b>					
<i>Quarterly Series</i>					
<b>VALUE OF EXPORTS</b>					
Average of 2 pre-War cycles					
1894-1909	+48	-14	62	+0.7	-0.6
Two pre-War cycles					
IQ '94-IQ '00-IIQ '01	+46	-8	54	+0.6	-0.5
IIIQ '01-IVQ '06-IIQ '09	+50	-20	70	+0.8	-0.7
Two post-inflation cycles					
IQ '24-IVQ '26-IQ '27	+44	-7	51	+1.3	-2.3
IIQ '27-IIQ '29-IQ '33 <sup>1</sup>	+38	-91	129	+1.4	-2.0

<sup>1</sup> Tentative final low.

The first post-inflation cycle, 1924-26, started from a relatively low point, inasmuch as the depression marking the end of the currency inflation had reached extreme depths in many aspects of the economy. The subsequent expansion, beginning in the early months of 1924, and lasting approximately a year, was characterized by rises of relatively large cyclical amplitudes in most of the fifteen series presented in Part A of Table 9. Because of the short duration of this period of expansion, the intensity of rise was high in many series. In only four series was the amplitude of the cyclical rise *less* than the average of expansion amplitudes in corresponding pre-War series.<sup>10</sup> Ten series show *no* pre-War cycle with greater amplitude of expansion.<sup>11</sup> In only one series of the fifteen, vessels under construction, was the intensity of rise (cyclical expansion per month or year) less than the pre-War average.

The contraction in this cycle, occurring in the period 1925-26, was in most series milder than the expansion. Nevertheless, for eight series the amplitude of contraction was greater than pre-War average amplitude.<sup>12</sup> Intensity of the cyclical decline was

<sup>10</sup> Vessels under construction, production of potassium salts, wholesale price index and value of imports.

<sup>11</sup> Production of pig iron, coal, coke and wheat, index of stock prices, freight car loadings, railway freight earnings, railway passenger earnings, unemployment in trade unions, business failures.

<sup>12</sup> Pig-iron production, vessels under construction, rye production,

greater than pre-War average contraction intensity in eleven series.

Ten of the fifteen series show a greater *total* amplitude during the cycle 1924-26 than their pre-War average total amplitude. This would seem to be a reflection of relatively greater amplitude of cyclical expansion rather than of contraction. In ten series the amplitude of rise accounts for 50 per cent or more of the total amplitude and in six of these for more than 70 per cent of the total.<sup>13</sup>

The relatively large amplitude of the first post-inflation cycle, 1924-26, was especially marked in series of industrial production and domestic trade. The cyclical amplitude in agricultural production and commodity price series was not so conspicuously large.

Expansion in the second post-inflation cycle, 1926-32, began at a relatively high level. Only four of the fifteen series show greater amplitude of cyclical rise than in the first post-inflation cycle.<sup>14</sup> But in nine series the amplitude of cyclical expan-

index of stock prices, railway passenger earnings, applicants for positions, business failures, value of imports.

<sup>13</sup> Since only four of the twenty-three annual series considered record a decline in 1925-26, the decline was not strongly pronounced relatively. As noted before, in *annual* series amplitudes of cyclical fluctuations tend to be dampened and only the wider swings are likely to appear.

<sup>14</sup> Vessels under construction, stock prices, business failures, value of imports.

sion was greater than the pre-War average, indicating that the post-inflation period was generally characterized by wide cyclical swings. The intensity of this expansion was less pronounced than in the cycle 1924-26, not only because the amplitude of the rise was in most series less than in that cycle, but also because the length of the period of expansion was generally greater. Only three series show larger intensity of rise in the second post-inflation cycle than in the first. But the rate of expansion of ten series was greater than the corresponding pre-War average.

The cycle 1926-32, however, is characterized especially by great amplitude of contraction. For thirteen series the amplitude of the decline was greater than the average for pre-War cycles. Indeed, eleven series show greater severity of contraction than in any recorded pre-War cycle.<sup>15</sup> Differences in the intensity of the fall were not so pronounced, for many of the series show a relatively long period of contraction. Intensity of fall was greater in the second post-inflation cycle than the corresponding average for pre-War cycles in seven series, and greater than the intensity of fall in the first post-inflation cycle in only three series.

<sup>15</sup> Pig-iron, coal and coke production, vessels under construction, rye production, wholesale price index, index of stock prices, railway passenger earnings, applicants for positions, business failures, value of imports.

Thirteen series show a greater *total* amplitude in the cycle 1926-32 than in their pre-War averages, and of these, nine were marked by greater cyclical amplitude than in the preceding cycle. These instances of relatively large cyclical amplitude are predominantly manifestations of large declines rather than of large rises. For eleven series the amplitude of the cyclical decline accounted for more than 50 per cent of the total amplitude; for three series, which move inversely to the general business cycle, the amplitude of the rise was more than half of the total. As in the first post-inflation cycle, great amplitude was shown in series of industrial production and domestic trade. However, the large amplitude of decline, which characterized this cycle, was conspicuous in practically all the series examined.

That post-inflation cyclical fluctuations have been exceptionally wide is borne out also by those series that show only one cycle or more than two cycles during the years 1924-32. Of thirteen series that passed through one cycle (most of them are annual series) eleven show greater total amplitude than in the average of corresponding pre-War series. Ten of these series are marked by cyclical amplitude of unprecedented severity.<sup>16</sup> Eight series show larger

<sup>16</sup> Sugar beets processed, zinc production, money circulation, savings deposits surplus, index of prices of five textiles, wholesale price of wool, Reichsbank clearings, coal miners' wages, business failures, organization of joint-stock companies.



amplitude of cyclical rise, and twelve exhibit larger amplitude of cyclical fall, than in the pre-War average. Extraordinarily high intensity of rise and fall also was apparent in most of the thirteen series.<sup>17</sup>

Five series, presented in Part C of Table 9, underwent three or more post-inflation cycles. Of these, two show greater amplitude in each of the cycles than in the pre-War average. Two show greater amplitude in only the first post-inflation cycle and one in only the second post-inflation cycle. Part D includes ten series that passed through two cycles with erratic turning points in the years 1924-32. In six series—wheat crop, Reichsbank discount rate, gold cover of money circulation, wholesale price of pork, railway freight traffic, and value of exports—the amplitude of fluctuation of the second cycle was greater than the pre-War average cyclical amplitude.

Thus it may be said that the cyclical amplitude of the swings in the post-inflation period was in most series greater, often considerably greater, than in comparable pre-War series. In ten series out of the group of fifteen that conform to the post-inflation reference-cycles, the total cyclical amplitude of each

<sup>17</sup> Four commodity price series are included in this group. It is interesting to observe that the so-called 'free' prices, as represented by the index of textile raw material prices and the wholesale price of wool, show very wide cyclical fluctuations in the post-inflation period, particularly in the phase of contraction. The prices of coal and iron, which are subject to regulation, are characterized by relatively mild cyclical fluctuations.

of the two post-inflation cycles is greater than the amplitude of the pre-War averages. Series showing but one cycle during 1924-32 also underwent extraordinarily large fluctuations. Relatively wide amplitude is especially evident in industrial production and domestic trade series. The violence of the swings seems to be characterized especially by a wide rise of high intensity with the beginning of post-inflation recovery and a sweeping contraction in the recession after 1928 and 1929.

*e. Summary*

It appears, then, from the statistical evidence thus far presented, that most aspects of German industrial production and employment, commodity and security prices, money and banking, domestic and foreign trade, passed through two cycles during the years 1924-32.

The first of these cycles, approximately delimited by the dates, December 1923 and March 1926, was of short duration in comparison with pre-War German cyclical experience. High points of the series conforming to the cycle are grouped with relatively small dispersion about March 1925. The expansion phase, which was of exceptional amplitude and intensity, was terminated abruptly. The subsequent contraction was short and of less amplitude than the expansion. Numerous series do not actually fall during the contraction phase of this cycle but most series

show at least retardation in their rates of rise during that phase.

The second post-inflation cycle began during the spring of 1926—approximately in April 1926—and continued until the late summer of 1932. It is thus one of the longest of German cycles on record. It has been closely enmeshed with the totality of German economy, inasmuch as almost all series examined give evidence of actual rise and fall during its course. The high points of series conforming to this cycle appear at widely separated dates. Therefore its crest is difficult to establish. However, a variety of economic activities reached their highest levels during the spring of 1928. The amplitude of rise and fall during the cycle has also been unusually large. Especially marked is the severity and long duration of the phase of contraction.

### 3. CYCLICAL BEHAVIOR OF SIGNIFICANT GROUPS IN GERMAN ECONOMY, 1924-1933

The comparison of cyclical fluctuations in selected time series during pre-War and post-inflation periods has brought forth certain general characteristics of the cycles from 1924 to 1933. It is believed that more intensive study of groups of series reflecting various important aspects of German economy will further illuminate the nature of the post-inflation cycles.

Eighty-four series relating to a variety of eco-  
[170

nomie categories are considered for purposes of this study. They have been classified in the following seven groups: industrial and agricultural production, currency, credit and capital, commodity and security prices, employment and wages, business organization, domestic trade, foreign trade. The character of each of the eighty-four series (all but a few of which cover the full period 1924-33) is described under its appropriate division.<sup>18</sup> The series are examined, according to the procedure outlined above, with a view to determining the duration, timing and amplitude of their cyclical fluctuations, and their conformity to the general pattern.<sup>19</sup>

<sup>18</sup> Most of these series have been published, from time to time, in the quarterly of the Institut für Konjunkturforschung, *Vierteljahrshefte zur Konjunkturforschung*, Vols. 1-8, in the monthly of the Statistisches Reichsamt, *Wirtschaft und Statistik*, Vols. 4-19, and in the annual statistical abstract of the Statistisches Reichsamt, *Statistisches Jahrbuch für das Deutsche Reich*, 1924-1933. A few series have not been published for all the years 1924-33; these were obtained from the Statistisches Reichsamt.

<sup>19</sup> Charts of the specific cyclical pattern in each series are also presented in appropriate sections. The method of obtaining these patterns is described in the first section of this chapter. To repeat briefly, each series is corrected for seasonal variations, if any appear, and then is broken into segments on the basis of its successive cyclical low points. Next, the average value of the series during each specific cycle is computed, and the values at specific low and high points are turned into relatives on the basis of the above average as 100. Further, the periods of specific expansion and contraction are broken into thirds, for each of which an average value is determined and then converted into a relative of the cycle average. Thus, for each specific cycle nine observations are plotted. Inasmuch as these nine points are calculated on the basis of the average of the items in the cycle to which they relate, the terminal low of the first cycle and the initial low of the second cycle have in most instances differ-

### *a. Industrial and Agricultural Production*

Twenty-four series have been selected as representative of various aspects of industrial and agricultural production. This group includes nine monthly and three annual series of industrial production; two monthly series of building construction and one quarterly series of construction of vessels; two monthly and four annual series reflecting agricultural production; one monthly index of orders for manufacturing and construction industry; and two monthly series of commodity stocks. In somewhat more detail, these series are as follows:

#### A. INDUSTRIAL PRODUCTION

1. General index of industrial production: a monthly weighted average of commodity output in the coal, iron, non-ferrous metal, lime, cement, tile, potash, machine, automobile, textile, shoe, porcelain, paper, piano and clock industries, on the base, 1928 = 100. This index is estimated to reflect about 30 per cent, in value, of total German industrial production.

2. Index of industrial production of

a. production goods: a weighted monthly average of production of coal, iron, non-ferrous metals, building materials, potash, wood and cellulose, on the base, 1928 = 100. This index is a component of the general index, wherein it has a weight of 50 per cent.

b. consumption goods: a weighted monthly average of production of machines, automobiles, textiles, shoes, por-

ent values. Reference low and high points are marked by heavy vertical lines on the charts.

celain, paper, pianos and clocks, on the base, 1928 = 100. This, too, is a component of the general index, with a weight of 50 per cent.

3. Production of
  - a. pig iron: total monthly production of pig iron in Germany, exclusive of the Saar, in tons.
  - b. pig steel: total monthly production of pig steel in Germany, exclusive of the Saar, in tons.
  - c. coal: total monthly production of coal (bituminous and anthracite) in Germany, exclusive of the Saar, in tons.
  - d. coke: total monthly production of coke in Germany, exclusive of the Saar, in tons.
  - e. lignite: total monthly production of lignite ("brown coal") in Germany, exclusive of the Saar, in tons.
4. Index of textile production: a weighted monthly average of output of various textiles, such as cotton yarn, linen yarn and hemp yarn, on the base, 1928 = 100.
5. Production of
  - a. zinc: total annual production of zinc (ore and refined), in tons.
  - b. potassium salts: total annual output of potassium salts, in tons.
6. Sugar beets processed: total annual tonnage of sugar beets converted into raw sugar.

#### B. CONSTRUCTION

7. Residential buildings completed: the number of residential buildings completed each month in 96 large and middle-sized cities. This series extends only from January 1925 onward. Unfortunately, it was impossible to secure monthly data on the beginning of building construction prior to 1928.

8. Industrial buildings completed: the number of industrial buildings completed each month in 96 large and middle-sized cities from January 1925 on.

9. Vessels under construction: the gross tonnage of vessels under construction in German shipyards, during each quarter. This series takes into account only vessels of 100 tons and upwards, the construction of which has actually been commenced.

#### C. AGRICULTURAL PRODUCTION

##### 10. Crops

a. rye: total annual crop of rye, in bushels.

b. wheat: total annual crop of wheat, in bushels.

c. potato: total annual crop of potatoes, in bushels.

d. hay: total annual harvest of hay, in tons.

##### 11. Animals marketed for slaughter

a. hogs: the total weight (in kilograms) of the hogs marketed for slaughter each month.

b. cattle: the total weight (in kilograms) of cattle marketed for slaughter each month.

#### D. ORDERS

12. Inflow of orders: an index of the new orders in the iron, machinery, textile and building industries.

"Weighting is based on the money volume of production in the respective industrial groups. So far as it has been possible to distinguish between home and foreign orders, only domestic orders have been taken into account. . . . Statistics based on selling prices are converted into quantity statistics by a process of reduction with the aid of appropriate

price index figures. . . . The index has been calculated on the basis of July, 1924, to June, 1926 = 100." <sup>20</sup>

#### E. COMMODITY STOCKS

13. Textile raw materials stocks: total weight of stocks of raw cotton, washed wool, wool slivers and flax, in the hands of producers, in terms of relatives on the base, 1928 = 100.

14. Coal stocks: total tonnage of stocks of coal, coke and briquettes at the mines at the end of each month. Coke tonnage has been converted into terms of comparability with coal tonnage on the basis, 1 ton of coke =  $1 \frac{1}{3}$  tons of coal. One ton of briquettes is assumed to be equivalent to one ton of coal.

*Number of specific cycles.* The nine monthly series of industrial production, covering the years 1924-33, show two clearly-defined cycles that agree closely in timing with the reference-cycles of that period: the first begins early or in the middle of 1924 and lasts until about the beginning of 1926; the second extends from the latter time to the autumn of 1932. Of the three *annual* series of industrial production, only one—output of potassium salts—shows two cycles, 1924-26 and 1926-33. The others, sugar beets processed and output of zinc, are marked by one cycle in the post-inflation period. (It is possible that the annual data tend to dampen what may have been a relatively mild contraction in 1925 so that it is not at all apparent.) The build-

<sup>20</sup> Ernst Wagemann, *Economic Rhythm* (McGraw-Hill, 1930), pp. 147, 149.



**TABLE 10**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO INDUSTRIAL AND AGRICULTURAL PRODUCTION, 1924-1933**

(1) SERIES	(2) NUMBER AND DELIMIT- ING DATES OF SPE- CIFIC CYCLES	(3) DURATION IN MONTHS	(4) LEAD (-) OR LAG (+) OF SPECIFIC TURNING POINTS WITH RESPECT TO REFER- ENCE TURNING POINTS IN MONTHS						(5) CONFORMITY TO BE- HAVIOR OF THE TWO REFERENCE CYCLES			(6) AMPLITUDE OF SPECIFIC CYCLE	
			EX- PAN- SION	CON- TRACTION	FULL CYCLE	FIRST LOW	SECOND		CYCLE EX- PANSION	CYCLE CON- TRACTION	EX- PAN- SION	CON- TRACTION	FULL CYCLE
							LOW	HIGH					
<b>A. INDUSTRIAL PRODUCTION</b>													
<b>1. General index</b>													
	2 Jan'24-Apr'26	20	7	27	+2	+6	+1	+	+	+46	-11	57	
	May'26-Aug'32	23	53	76	+1	0	0	+	+	+38	-55	93	
<b>2. Indexes of production</b>													
<b>a. production goods</b>													
	2 Jan'24-Jan'26	13	11	24	+2	-1	-2	+	+	+51	-21	72	
	Feb'26-Aug'32	41	38	79	-2	+15	0	+	+	+56	-87	143	
<b>b. consumption goods</b>													
	2 Jan'24-May'26	11	17	28	+2	-3	+2	+	+	+27	-30	57	
	Jun'26-Aug'32	16	59	75	+2	-6	0	+	+	+58	-43	101	
<b>3. Production of</b>													
<b>a. pig iron</b>													
	2 Oct'23-Feb'26	20	8	28	-1	+3	-1	+	+	+108	-45	153	
	Mar'26-Aug'32	21	57	78	-1	-4	0	+	+	+72	-115	187	
<b>b. pig steel</b>													
	2 Oct'23-Jan'26	16	11	27	-1	-1	-2	+	+	+102	-47	149	
	Feb'26-Jan'32	22	50	72	-2	-4	-7	+	+	+76	-108	184	
<b>c. coal</b>													
	2 Aug'23-Jan'26	13	16	29	-3	-6	-2	+	+	+87	-10	97	
	Feb'26-Mar'32	42	32	74	-2	+16	-5	+	+	+32	-52	84	
<b>d. coke</b>													
	2 Oct'23-Jan'26	13	14	27	-1	-4	-2	+	+	+93	-21	114	
	Feb'26-Apr'32	46	29	75	-2	+20	-4	+	+	+58	-78	136	
<b>e. lignite</b>													
	2 Oct'23-May'26	26	5	31	-1	+9	+2	+	+	+45	-16	61	
	Jun'26-Apr'33 <sup>1</sup>	35	48	83	+2	+13	+8	+	+	+43	-50	93	

<b>4. Index of textile production</b>												
	2 Jan'24-Apr'26	19	8	27	+2	+5	+1	+	+	+29	-29	58
	May'26-Jun'32	16	58	74	+1	-7	-2	+	+	+48	-42	90
<b>5. Production of</b>												
<i>a. zinc<sup>a</sup></i>												
	1 1924-32 <sup>1</sup>	5	3	8	+1			+	-	+89	-81	170
<i>b. potassium salts<sup>a</sup></i>												
	2 1924-26	1	1	2	+1	0	0	+	+	+36	-21	57
	1926-32 <sup>1</sup>	3	3	6	0	+1	0	+	+	+35	-58	93
<b>6. Sugar beets processed<sup>a</sup></b>												
	1 1923-31	7	1	8	0			+	-	+80	-60	140
						+2	-1	+	+			
<b>B. CONSTRUCTION</b>												
<b>7. Residential buildings completed</b>												
	1 Sept'25-Mar'32	50	28	78	-6	+20	-5	+	+	+119	-137	256
<b>8. Industrial buildings completed</b>												
	1 May'27-Mar'32	33	25	58	+14	+23	-5	+	+	+73	-104	177
<b>9. Vessels under construction</b>												
	2 IIIQ'23-IIIQ'26	21	18	39	-1	-6	+5	-	+	+42	-96	138
	IVQ'26-IIQ'33 <sup>1</sup>	12	69	81	+5	-7	+9	+	+	+125	-191	316
<b>C. AGRICULTURAL PRODUCTION</b>												
<b>10. Crops</b>												
<i>a. rye<sup>a</sup></i>												
	2 1924-26	1	1	2	+1	0	0	+	+	+35	-25	60
	1926-31	2	3	5	0	0	-1	+	+	+28	-24	52
<i>b. wheat<sup>a</sup></i>												
	2 1924-26	1	1	2	+1	0	0	+	+	+29	-22	51
	1926-29	2	1	3	0	0	-3	+	-	+39	-16	55
<i>c. potato<sup>a</sup></i>												
	3 1923-26	2	1	3	0	0	0	+	+	+26	-34	60
	1926-29	2	1	3	0	0		+	-	+30	-3	33
	1929-31	1	1	2			-1			+16	-8	24
<i>d. hay<sup>a</sup></i>												
	2 1925-28	2	1	3	+2	+2	+2	-	-	+6	-14	20
	1928-32 <sup>1</sup>	3	1	4	+2	+3	0	-	-	+21	-1	22

TABLE 10 (cont.)

## CYCLICAL BEHAVIOR OF SERIES RELATING TO INDUSTRIAL AND AGRICULTURAL PRODUCTION, 1924-1935

(1) SERIES	(2) NUMBER AND DELIMIT- ING DATES OF SPE- CIFIC CYCLES	(3) DURATION IN MONTHS			(4) LEAD (-) OR LAG (+) OF SPECIFIC TURNING POINTS WITH RESPECT TO REFER- ENCE TURNING POINTS IN MONTHS			(5) CONFORMITY TO BE- HAVIOR OF THE TWO REFERENCE CYCLES			(6) AMPLITUDE OF SPECIFIC CYCLE		
		EX- PAN- SION	CON- TRACTION	FULL CYCLE	FIRST LOW	HIGH	SECOND LOW	REFERENCE CYCLE EX- PANSION	REFERENCE CYCLE CON- TRACTION	EX- PAN- SION	CON- TRACTION	FULL CYCLE	
<b>C. AGRICULTURAL PRODUCTION</b>													
<b>11. Animals marketed for slaughter</b>													
<i>a. hogs</i>	3 Mar'24-Jul'26	13	15	28	+4	+1	+4	+	+	+55	-39	94	
	Aug'26-Oct'29	19	20	39	+4	-1		+	+	+32	-42	74	
	Nov'29-Mar'33 <sup>1</sup>	25	16	41			+7			+36	-15	51	
<i>b. cattle</i>	3 Mar'24-Mar'27	24	12	36	+4	+12	+12	+	-	+32	-20	52	
	Apr'27-Nov'30	31	13	44	+12	+19		+	-	+21	-22	43	
	Dec'30-Apr'33 <sup>1</sup>	13	16	29			+8						
<b>D. ORDERS</b>													
<b>12. Index of new orders</b>	2 Jan'24-Jan'26	13	11	24	+2	-1	-2	+	+	+86	-57	143	
	Feb'26-Feb'32	15	58	73	-2	-11	-6	+	+	+76	-103	179	
<b>E. COMMODITY STOCKS</b>													
<b>13. Textile raw materials</b>	1 Aug'26-Oct'31	11	51	62	+5	-8	-10	+	+ <sup>1</sup>	+68	-61	129	
<b>14. Coal</b>	2 Jun'25-Nov'28	18	23	41	-9	-15		-	-	-148	+55	203	
	Dec'28-Apr'33 <sup>1</sup>	7	46	53			+8			-22	+124	146	

<sup>1</sup> Tentative final low.<sup>2</sup> Comparison is possible with only the second of the two reference cycles because of the brevity of the series.<sup>3</sup> Duration in years.

ing construction series, which begin in January 1925, are marked by one cycle in the period 1926-33. One, residential buildings completed, indicates a cyclical contraction during 1925. The quarterly series, vessels under construction, shows two cycles, 1924-26 and 1926-33.

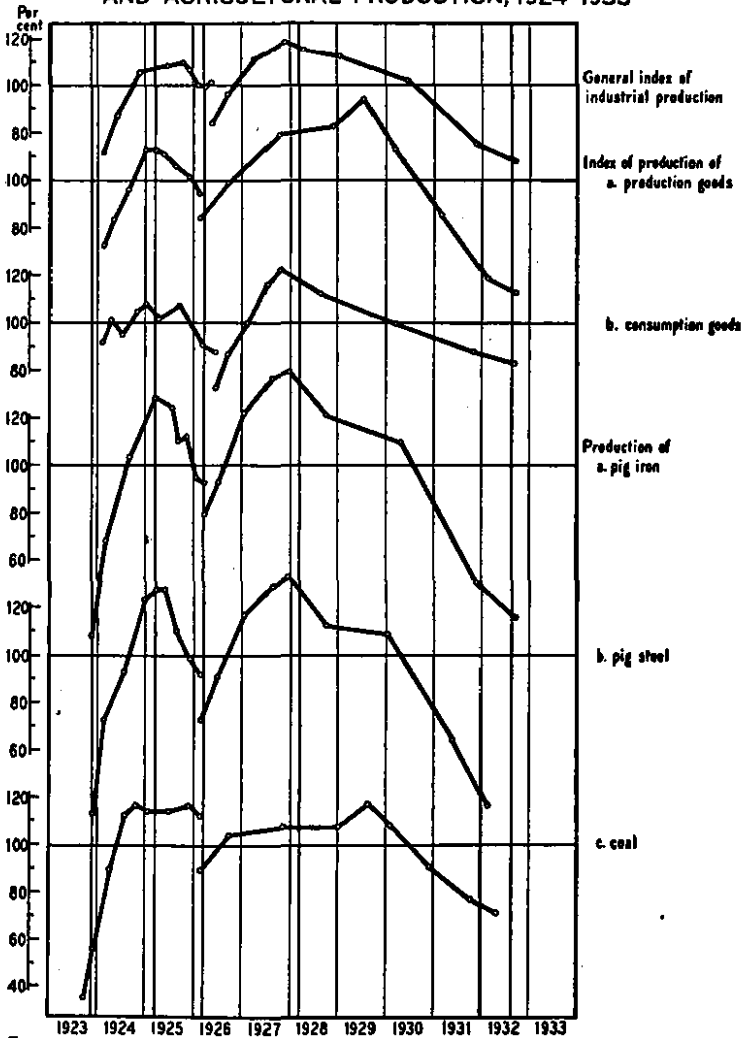
The series of agricultural production fail to agree closely in respect of their specific cycles. The two monthly series, hogs and cattle marketed for slaughter, give evidence of three cycles, but they have little correspondence of timing. The annual series of hay production shows two cycles, 1925-28 and 1928-32; rye production, two cycles, 1924-26 and 1926-31; potato production, three cycles, 1923-26, 1926-29 and 1929-31; wheat production, two cycles, 1924-26 and 1926-29.

'Inflow of orders' passed through two cycles whose terminal points are near those of the two reference-cycles. The coal stocks series, which goes back to the beginning of 1925, shows two inverted cycles, 1925-28 and 1928-33. The series of textile raw materials stocks shows one cycle, 1926-31.

*Duration.* The durations of the two cycles in the monthly production series show fair correspondence with those of the appropriate reference-cycles. In the first specific cycle, the durations range between 24 and 31 months; in the second, between 72 and 83 months. Durations of the two post-inflation reference-cycles are, respectively, 28 and 77 months. However, in these nine series there is considerable

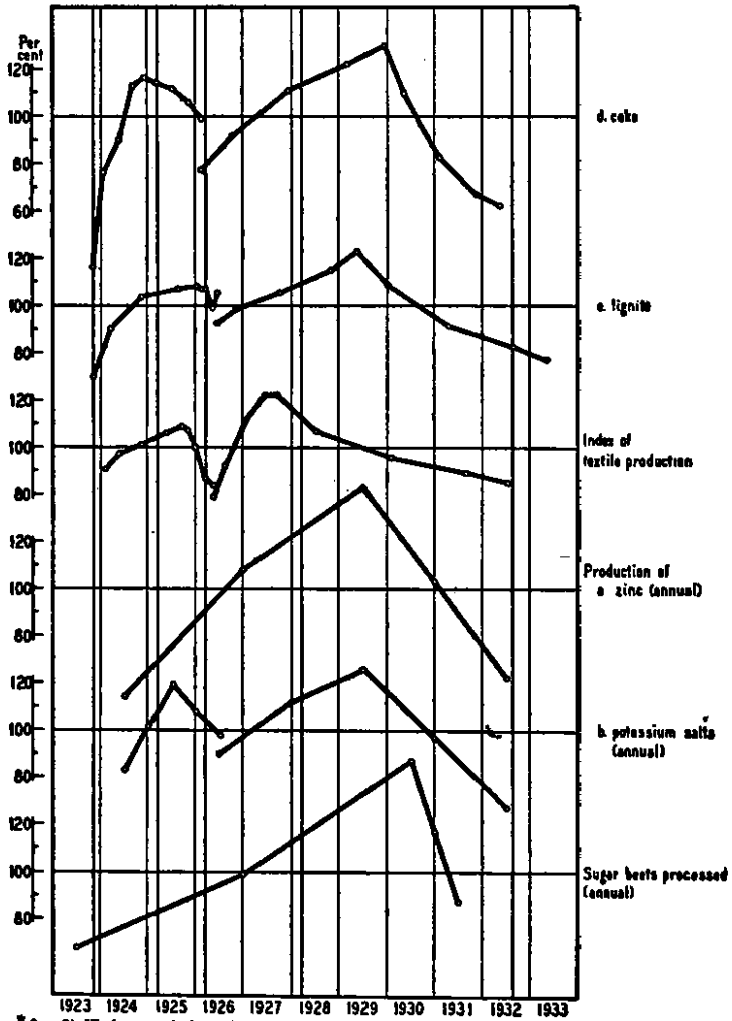
## CHART 2

### CYCLICAL BEHAVIOR OF SERIES RELATING TO INDUSTRIAL AND AGRICULTURAL PRODUCTION, 1924-1933\*



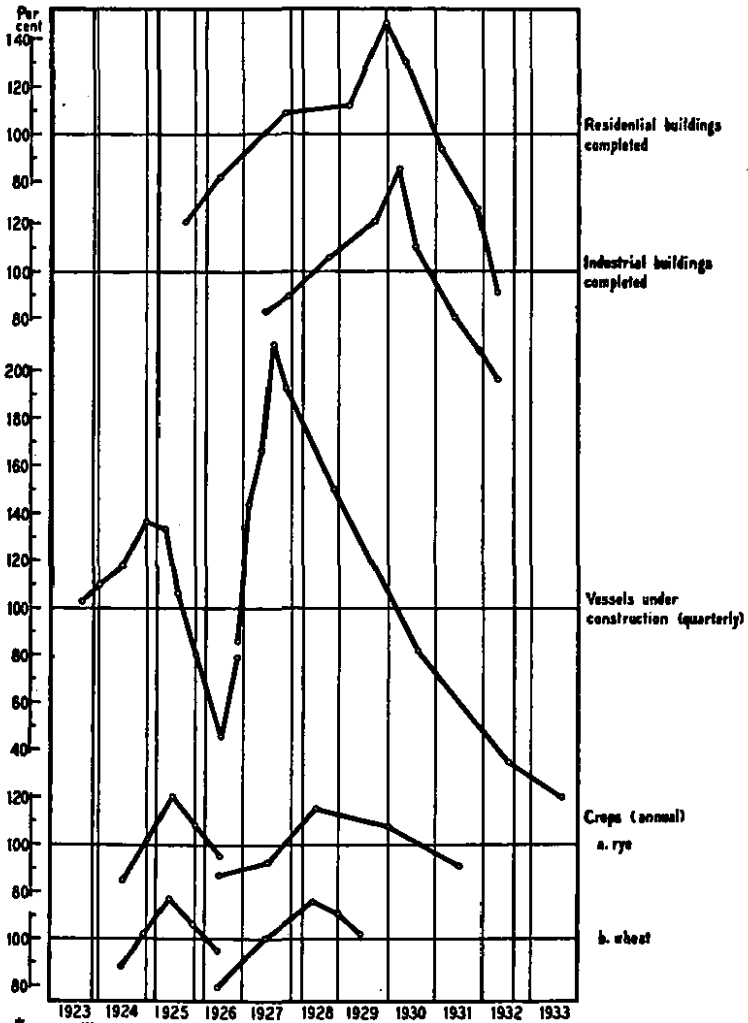
\* See Ch. III, footnote 19, for explanation of construction of charts

**CHART 2 (CONT)**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO INDUSTRIAL  
 AND AGRICULTURAL PRODUCTION, 1924-1933\***



\* See Ch. III, footnote 19, for explanation of construction of charts

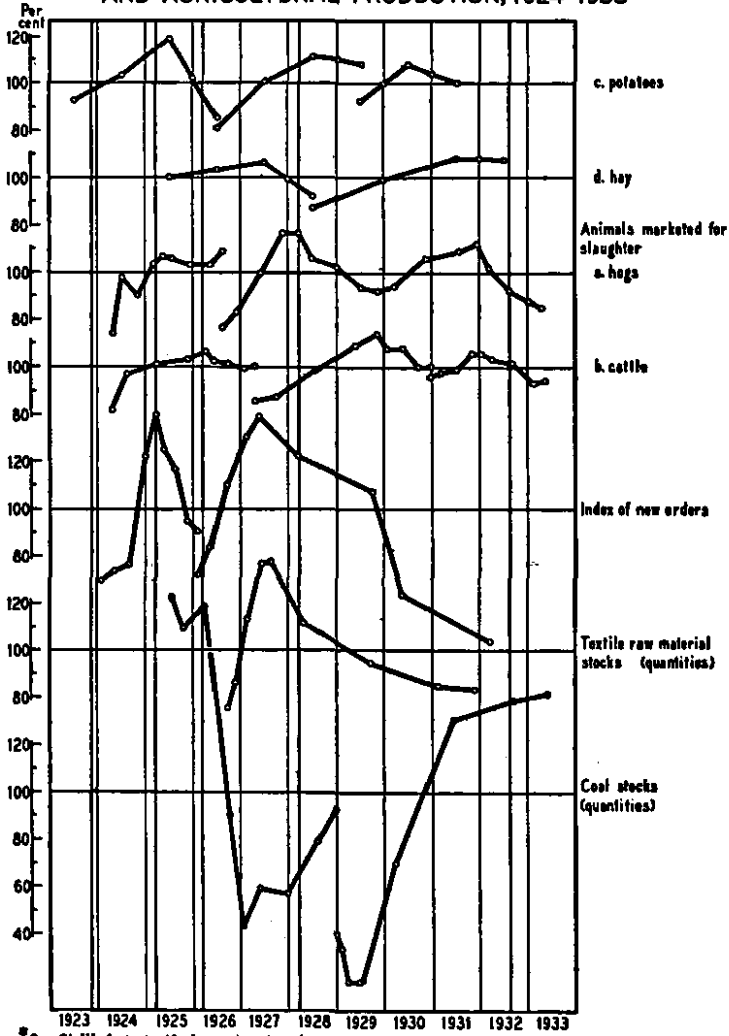
**CHART 2 (CONT.)**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO INDUSTRIAL**  
**AND AGRICULTURAL PRODUCTION, 1924-1933\***



\*See Ch. III, footnote 19, for explanation of construction of charts

### CHART 2 (CONT.)

#### CYCLICAL BEHAVIOR OF SERIES RELATING TO INDUSTRIAL AND AGRICULTURAL PRODUCTION, 1924-1933\*



\* See Ch. III, footnote 19, for explanation of construction of charts



variation in the relative lengths of the phases of expansion and contraction in both specific cycles. The series, general industrial production, output of production goods, pig iron, pig steel, lignite and textiles have, in the first cycle, periods of contraction shorter (by from 16 to 81 per cent) than their periods of expansion. On the other hand, output of consumption goods, coal and coke, show *longer* periods of contraction (by from 7 to 55 per cent). There is as much lack of agreement in the relative lengths of the phases in the second cycle: three series, output of production goods, coal and coke, are characterized by relatively shorter periods of contraction (by from 7 to 37 per cent); and six series, general industrial production, output of consumption goods, pig iron, pig steel, lignite and textiles, have longer periods of contraction (by from 37 to 269 per cent). Both series of building construction show, in their one cycle, a longer period of expansion than of contraction. Contraction in the series of vessels under construction is relatively short in the first cycle and especially long in the second. Agricultural series with two cycles in the post-inflation period show the first cycle to have been of relatively short duration. Of the remaining series, only 'inflow of orders' agrees closely with the reference-pattern in the relative duration of its specific cycles and cyclical phases.

*Timing.* The cyclical turning points of the series, production of pig iron, are more closely timed with the low and high points in the reference-pattern than

those of any other industrial production series. But all of these series accord fairly well with the reference turning points, except only the 'high' in the second cycle, where some of the specific high points lag considerably. The average deviation of specific turning points (in the nine monthly industrial production series) from corresponding reference points are: initial low point of the first cycle, 1.7 months; high point of the first cycle, 4.2 months; terminal low of the first cycle and initial low of the second cycle, 1.7 months; high point of the second cycle, 9.4 months; terminal low of the second cycle, 2.9 months. Of these nine series, coal, coke and lignite production show the greatest divergences of turning points in both cycles. The building construction series, as is to be expected, show rather long lags in their one apparent cycle. Certain of the cyclical lows and highs in the annual series of agricultural output are surprisingly close in time to the reference points. Three series, rye, wheat and potato crops, agree with the reference-pattern in showing high points in 1925 and 1928, and a low point in 1926. The cyclical turning points in hay crops deviate in every instance but one from the reference points. Like the industrial production series, the index of orders agrees well in timing with the reference lows of 1923, 1926 and 1932, and the high of 1925, but not with the high point of 1928. This series leads the reference-pattern at every turning point except the low of 1923.

*Conformity.* All of the monthly series of industrial production, building construction and new orders are characterized by specific cycles that conform to the first of the two post-inflation reference-cycles. Vessels under construction show a net decline during the period of the reference-cycle, but at a more rapid rate during the reference period of contraction than during the expansion; the annual series, sugar beets processed and zinc output, rise throughout the period 1924-26, but show a retardation in that advance during the reference contraction phase. Of the agricultural series, hogs slaughtered, rye, wheat and potato crops run a course parallel to the first reference-cycle. Conformity to the reference-cycle 1926-33 is even more pronounced throughout the entire production group. Only four series out of the entire group of twenty-four fail to show cycles that conform to the reference-pattern, namely, cattle marketed for slaughter, wheat, potato and hay crops. The series of coal stocks shows inverse conformity.

*Amplitude.* In magnitude of average total swing in the two cycles, the series of industrial production rank as follows: production of pig iron, pig steel, coke, production goods, coal, consumption goods, general industrial production, lignite, textiles. Every series but one—coal production—shows greater amplitude in the second post-inflation cycle than in the first. Especially marked were the cyclical amplitudes of rise in the first cycle, and of fall in the second

cycle. These generalizations also hold with respect to the cyclical amplitudes of the series, vessels under construction and new orders. Of the two building construction series, residential building shows the greater amplitude. Both commodity stocks series show wide cyclical swings. Compared with industrial production, the series of agricultural output show small cyclical amplitudes, nor is there consistency in the variation of magnitude of swing from one cycle to another.

*General observations.* Thus, the series of industrial production, construction, orders and commodity stocks show close correspondence in their cyclical fluctuations. The monthly series of industrial production conform throughout the post-inflation period with the reference-pattern; and the annual series of production, the series of construction, orders and stocks conform fairly closely. Variation from one series to another, however, is great in respect of the relative duration of periods of contraction and expansion. Iron and steel production agrees most closely of all the aspects of industrial production with the reference-pattern, and construction of vessels least. Specific turning points of the first post-inflation cycle apparent in the non-agricultural production series are closely grouped in respect of the reference-cycle low and high points; but the high point in the second cycle is not so well defined. Production of raw materials and of production goods show greater cyclical amplitudes than does production of con-

sumption goods. The amplitude of expansion was outstanding in the first cycle; the amplitude of contraction was outstanding in the second.

The agricultural series give evidence of relatively less agreement with the reference-pattern. Only one of the six series of agricultural output shows cycles that correspond fairly well with the post-inflation reference-cycles; two others pass through two cycles in the period 1924-33 but they differ considerably from the reference-pattern in timing; and three series show three cycles during that period. Cyclical amplitudes of these agricultural series are relatively small.

Two pronounced irregularities in the cyclical movements of the various production series are to be noted. Most of the monthly series are characterized by a sharp and short fall and rise in the late spring and early summer of 1924. This is an aspect of the interruption of expansion that was general throughout the German economy at that time. A sharp credit contraction on the part of the Reichsbank, together with the impingement of a strike in the Ruhr coal mines, seem to have been important factors making for this break in recovery (see Ch. II, Part A, Sec. 1, b). Furthermore, most of the monthly series of output of production goods and raw materials show a decided rise and fall during the period roughly delimited by the autumn of 1928 and the summer of 1929. Unusual seasonal factors, together with a lockout in the Rhenish-Westphalian

iron industry, apparently were active in making for the sudden contraction and subsequent short, compensating, expansion (see Ch. II, Part A, Sec. 4, a). Series of production of consumption goods, lignite and textiles do not give evidence of such an irregular movement.

### *b. Currency, Credit and Capital*

Fourteen monthly series, representative of various aspects of money, banking and capital, have been subjected to cyclical analysis. As few cover the entire post-inflation period, conclusions must be somewhat limited. The series are as follows:

1. The volume of money in circulation: the total volume of money, metal and paper, in circulation at the end of each month during the entire post-inflation period.
2. Reichsbank discount of bills and checks: the total value, at the end of each month, of the bills of exchange and checks discounted by the Reichsbank during the entire post-inflation period.
3. Loans and discounts, banks of issue: the end-of-month totals of the loans and discounts of all the German banks of issue, January 1924—April 1933.
4. Deposits, banks of issue: the end-of-month totals of the deposits with all the German banks of issue, January 1924—April 1933.
5. Loans and advances of private, public and note-issuing banks in Germany. From 80 to 85 per cent of the total banking business in Germany is done by the institutions here represented. The series gives month-end totals, December 1924 to May 1933.
6. Bills discounted by private, public and note-issuing

banks in Germany: the total value at the end of each month from December 1924 to May 1933.

7. Deposits, other than savings, with all the private, public and note-issuing banks in Germany. The series gives monthly totals from December 1924 to May 1933.

8. Monthly net increase in savings deposits with all German savings banks. This series, extending from September 1925 to January 1932, is obtained by subtracting the amount of withdrawals from savings accounts from the amount of deposits.

9. Domestic capital issues

a. bonds. This series gives the total nominal value of all bonds issued in Germany during each month from January 1925 to April 1933.

b. stocks. This series gives the total paid-in value of all shares of stock (excluding new shares issued in connection with the consolidation of enterprises) issued during each month from January 1926 to April 1933.

10. Reichsbank discount rate: the average monthly official discount rate of the Reichsbank for the entire post-inflation period.

11. Interest rates: private bank discount rate. This series gives the average monthly rate of discount for prime bankers' bills, quoted in Berlin, from December 1924 to April 1933.

12. Interest rates: monthly money. This series gives the average monthly rate for 30-day loans, quoted in Berlin, for the entire post-inflation period.

13. Annual rate of return on 5 per cent mortgage bonds: the average annual return on 5 per cent bonds issued by mortgage banks during each month from January 1924 to January 1932.

*Number of specific cycles.* Of the seven series covering the entire post-inflation period, 1924-33,

[190

only one (annual rate of return on 5 per cent bonds) shows two cycles with temporal limits comparable with the two post-inflation reference cycles. Three (money circulation, Reichsbank discount rates and monthly money rates) of the remaining six series show two cycles with erratic turning points, one (deposits of the bank of issue) shows three cycles, and two (Reichsbank discounts and loans and discounts of issuing banks) show four cycles. Seven other series do not cover the entire period 1924-33, for five begin at the end of 1924, and two begin at the end of 1925. During the period 1925-33, two series show one cycle, one series, two cycles, and two show three cycles; during the period 1926-33, one series shows two cycles, and one, three cycles. There is thus relatively little accord between the series in this group and the reference-pattern in respect of the number of cycles in the post-inflation years, nor is there even much agreement within the group itself. However, in many of the banking series a marked upswing is apparent during 1924-25 to 1929-30, after which there is a tendency towards decline. The series of interest rates show decline throughout the period of the first reference-cycle.

*Duration.* The specific cycles in these fourteen series vary in duration from 14 to 101 months. Only the one series with two cycles in the years 1924-32 shows similarity to the reference-pattern in respect of duration: the first cycle is short; the second is long and has a relatively long phase of contraction. Series



TABLE 11

## CYCLICAL BEHAVIOR OF SERIES RELATING TO CURRENCY, CREDIT AND CAPITAL, 1924-1933

(1) SERIES	(2) NUMBER AND DELIMIT- ING DATES OF SPE- CIFIC CYCLES	(3) DURATION IN MONTHS			(4) LEAD (-) OR LAG (+) OF SPECIFIC TURNING POINTS WITH RESPECT TO REFER- ENCE TURNING POINTS IN MONTHS			(5) CONFORMITY TO BE- HAVIOR OF THE TWO REFERENCE CYCLES			(6) AMPLITUDE OF SPECIFIC CYCLE		
		EX- PAN- SION	CON- TRACTION	FULL CYCLE	FIRST LOW	HIGH	SECOND LOW	REFERENCE CYCLE EK- PANSION	REFERENCE CYCLE CON- TRACTION	EX- PAN- SION	CON- TRACTION	FULL CYCLE	
1. Money circulation	2 Jul'23-May'31	76	18	94	-4			+	-	+122	-12	134	
	Jun'31-Dec'32	8	11	19		+20	+4	+	+	+9	-18	27	
2. Reichsbank discount of bills and checks	4 Nov'23-Jul'26	12	20	32	0	-4	+4	+	+	+124	-74	198	
	Aug'26-Jan'29	15	15	30	+4	-5		+	-	+68	-33	101	
	Feb'29-Aug'30	5	14	19						+41	-53	94	
	Sept'30-Dec'32	15	13	28			+4			+85	-60	145	
3. Loans and discounts, banks of issue	4 Jan'24-Oct'26	18	15	33	+2	+4	+7	+	+	+82	-54	136	
	Nov'26-Jan'29	10	17	27	+7	-7		+	-	+41	-30	71	
	Feb'29-Aug'30	3	16	19						+43	-51	94	
	Sept'30-Dec'32	17	11	28			+4			+73	-54	127	

4. Deposits, banks of issue	3 Aug'24-Jun'26	6	16	22	+9	-1	+3	-	+	+61	-56	117	
	Jul'26-Jan'31	14	41	55	+3	-7		+	+	+34	-70	104	
	Feb'31-Apr'33 <sup>1</sup>	8	19	27			+8			+56	-36	92	
5. Loans and advances, private, public, and note-issuing banks	1 Dec'24-May'33 <sup>1</sup>	73	28	101	+13			+ <sup>2</sup>	+ <sup>2</sup>	+103	-33	136	
						+34	+9						
6. Bills discounted, private, public, and note-issuing banks	3 Dec'24-Aug'26	7	13	20	+13	+4	+5			+25	-12	37	
	Sept'26-May'31	41	16	57	+5	+22		+ <sup>2</sup>	+ <sup>2</sup>	+44	-17	61	
	Jun'31-Mar'33 <sup>1</sup>	8	14	22			+7			+19	-13	32	
7. Deposits (other than savings) in private, public and note-issuing banks	1 Dec'24-May'33 <sup>1</sup>	66	35	101	+13			+ <sup>2</sup>	+ <sup>2</sup>	+84	-48	132	
						+27	+9						
8. Monthly net increases in savings deposits, savings banks	2 Dec'25-Sept'27	11	10	21	-3					+79	-38	117	
	Oct'27-Aug'31	14	33	47		+8	-12	+ <sup>2</sup>	+ <sup>2</sup>	+89	-392	481	
9. Domestic capital issues	a. bonds	3 Aug'25-Oct'27	15	11	26	-7					+210	-177	387
		Nov'27-May'29	7	12	19		+2		+ <sup>2</sup>	+ <sup>2</sup>	+92	-121	213
		Jun'29-Apr'33 <sup>1</sup>	15	32	47			+8			+275	-314	589
	b. stocks	3 Mar'26-Jan'28	12	10	22	0	-12				+163	-138	301
		Feb'28-Nov'30	12	22	34				+ <sup>2</sup>	+ <sup>2</sup>	+218	-261	479

TABLE 11 (cont.)

## CYCLICAL BEHAVIOR OF SERIES RELATING TO CURRENCY, CREDIT AND CAPITAL, 1924-1933

(1) SERIES	(2) NUMBER AND DELIMIT- ING DATES OF SPEC- IFIC CYCLES	(3) DURATION IN MONTHS			(4) LEAD (-) OR LAG (+) OF SPECIFIC TURNING POINTS WITH RESPECT TO REFER- ENCE TURNING POINTS IN MONTHS			(5) CONFORMITY TO BE- HAVIOR OF THE TWO REFERENCE CYCLES			(6) AMPLITUDE OF SPECIFIC CYCLE		
		EX- PAN- SION	CON- TRACTION	FULL CYCLE	FIRST LOW	HIGH	SECOND LOW	REFERENCE CYCLE EX- PANSION	REFERENCE CYCLE CON- TRACTION	EX- PAN- SION	CON- TRACTION	FULL CYCLE	
10. Reichsbank discount rate	Dec'30-Jun'32	9	10	19			-2			+415	-440	855	
	2 May'27-Sept'30	29	11	40	+14			-	+	+39	-54	93	
	Oct'30-Apr'33 <sup>1</sup>	11	20	31		+19	+8	-	+	+137	-137	274	
11. Interest rates, private bank discount rate	2 Jan'27-Aug'30	15	28	43	+10	+1		+ <sup>3</sup>	+ <sup>1</sup>	+48	-65	113	
	Sept'30-Dec'32	13	15	28			+4			+86	-76	162	
12. Interest rates, monthly money	2 Jun'26-Jul'30	36	13	49	+3	+15		-	+	+55	-69	124	
	Aug'30-Dec'32	16	13	29			+4	+	+	+69	-63	132	
13. Annual rate of return on 5% mortgage bonds	2 Jun'24-Aug'25	9	5	14	+7	0	-7	-	+	-75	+13	88	
	Sept'25-Jun'32	18	55	82	-7	-13	-2	-	-	-47	+39	86	

<sup>1</sup> Tentative final low.<sup>2</sup> Comparison is possible with only the second of the two reference cycles because of the brevity of the series.

with but one cycle during the entire period are characterized by a long phase of expansion and a short contraction. Cyclical durations in the other series show great variations, both in total length and in relative length of phases.

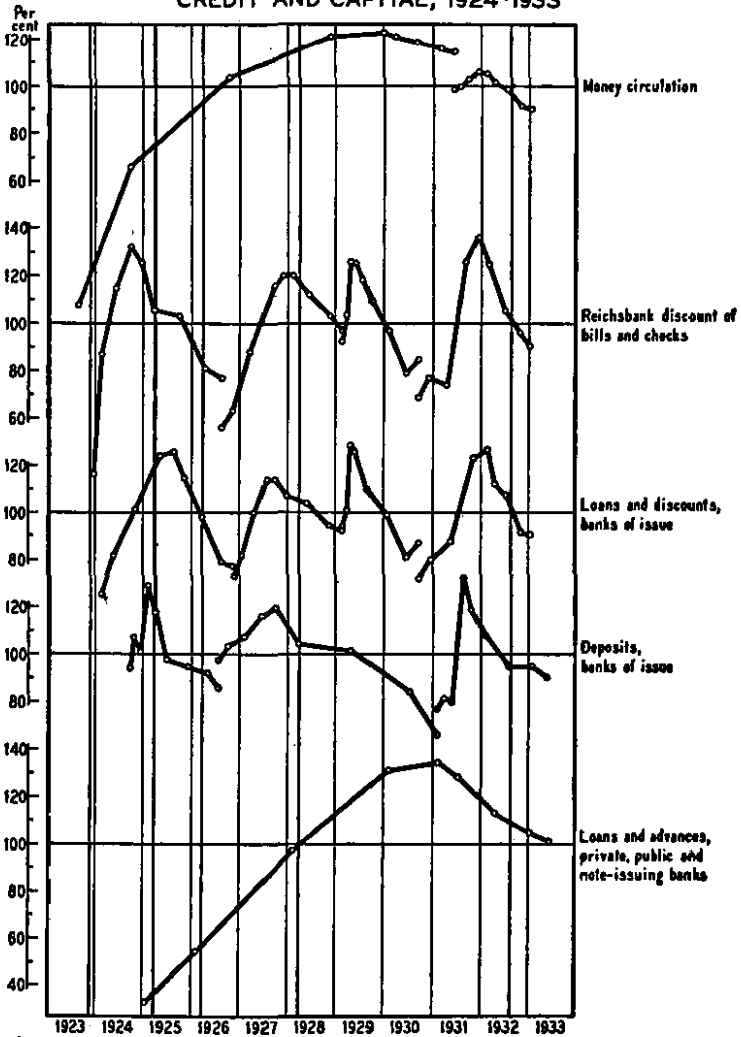
*Timing.* Because of the differences in the number and character of cycles apparent in the money and banking series, there is little possibility for generalization concerning the relative timing of cyclical turning points. In the one series with two cycles during 1924-32, all turning points except the high in the first cycle and the terminal low of the second cycle show large divergence from the corresponding reference points.

*Conformity.* Of the seven series that cover the period of the first reference-cycle, 1924-26, only two, discounts of the Reichsbank and of all the banks of issue, show cyclical movements that conform with that reference-cycle. But most give evidence of a retardation in expansion during the first reference contraction period. Ten out of the entire group of fourteen series conform to the second reference-cycle, and one (the annual rate of return on 5 per cent bonds) shows inverse conformity.

*Amplitude.* The greatest cyclical amplitudes are apparent in the two series of domestic capital issues, although nearly all the series show relatively wide swings. However, great variation in relationship between cyclical phases and amplitude makes any positive generalization difficult. Only a few series agree

### CHART 3

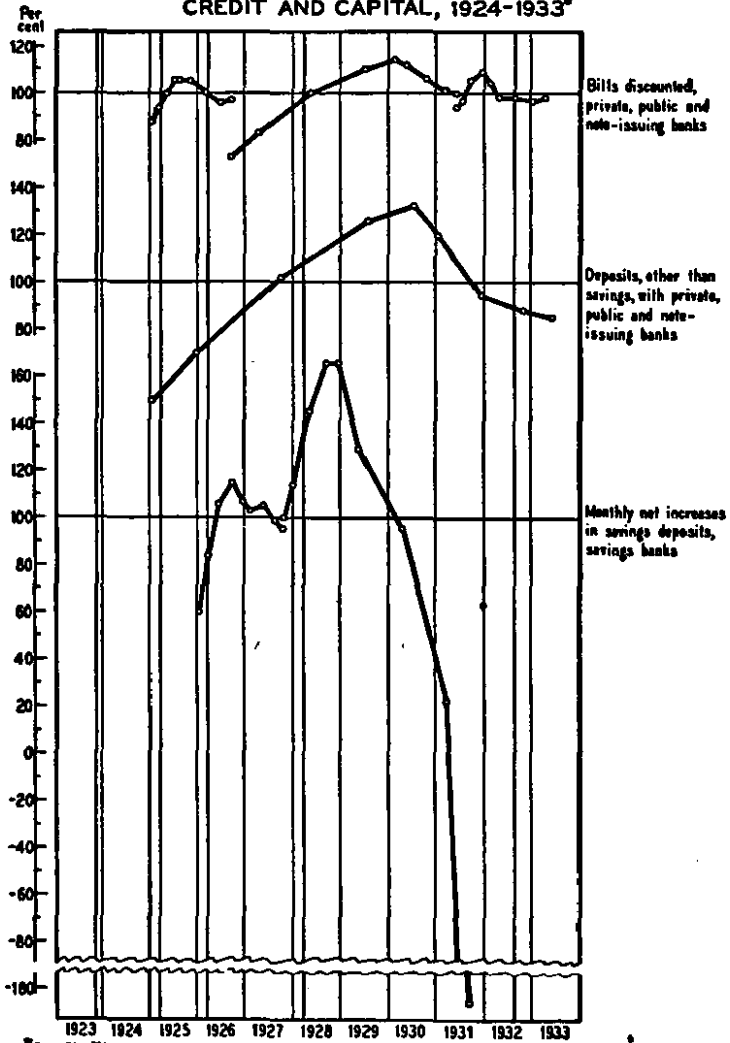
#### CYCLICAL BEHAVIOR OF SERIES RELATING TO CURRENCY, CREDIT AND CAPITAL, 1924-1933\*



\*See Ch. III, footnote 18, for explanation of construction of charts

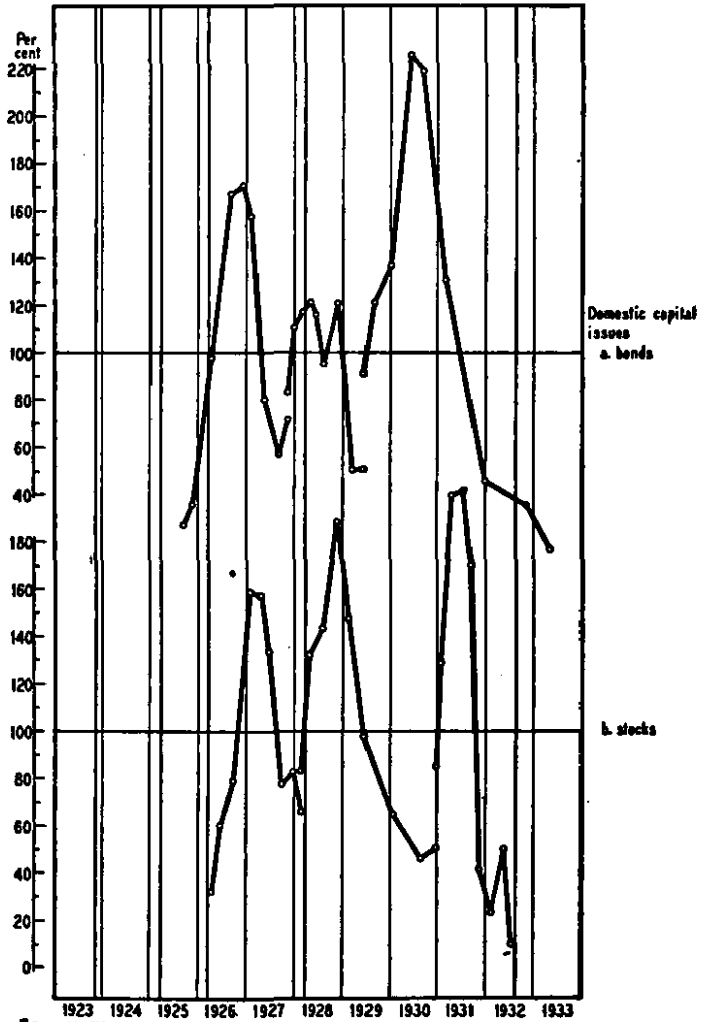
CHART 3 (CONT.)

CYCLICAL BEHAVIOR OF SERIES RELATING TO CURRENCY, CREDIT AND CAPITAL, 1924-1933\*



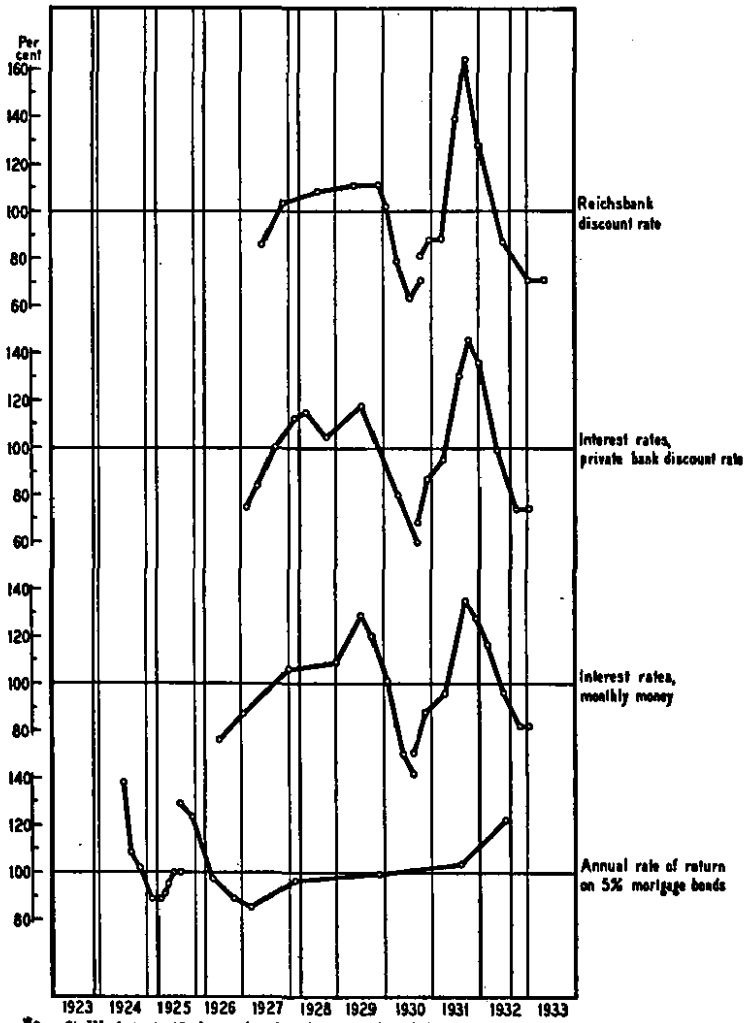
\*See Ch. III, footnote 19, for explanation of construction of charts

**CHART 3 (CONT.)**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO CURRENCY,**  
**CREDIT AND CAPITAL, 1924-1933\***



\*See Ch. III, footnote 19, for explanation of construction of charts

**CHART 3 (CONT.)**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO CURRENCY,**  
**CREDIT AND CAPITAL, 1924-1933\***



\*See Ch. III, footnote 19, for explanation of construction of charts



with the reference-pattern in that they are characterized by an especially wide amplitude in the first post-inflation expansion and in the most recent contraction.

*General observations.* There is, then, little consistency within this group with respect to cyclical behavior during the post-inflation period. Of all the groups of series here considered, it shows least agreement with the reference-pattern. Series of currency circulation and activities of private, public and note-issuing banks give indication of a tendency to rise to a peak in 1929-30, and to decline thereafter. Series related to the activities of only the banks of issue show cyclical movement parallel to the first reference-cycle and a sharply-pronounced irregular movement during the credit crisis of 1931. The interest rate series show, in general, decline until the end of 1926, rise from then until 1930, decline in 1930, a sharp rise in 1931, and further decline in 1932.

### *c. Commodity and Security Prices*

Fifteen commodity price series and one index of stock prices are considered in this group. Thirteen of the commodity price series and the stock price index cover the period January 1924 to January 1932. Data for two series, the indexes of 'free' and of regulated prices, are available only since January 1926. The various price series are as follows:

1. A general index of commodity prices at wholesale. This  
[200

is a weighted arithmetic mean of relative prices on the base, 1913 = 100. It includes some 800 price quotations relating to about 400 commodities. The general index is divisible into several sub-groups:

2. Indexes of wholesale prices of

a. agricultural products. This group has a weight of 35 per cent in the general index. It includes prices of vegetable foods, meats, animal products and fodder.

b. raw materials and semi-finished goods. This has a weight of 38 per cent in the general index. It includes prices of coal, iron and iron raw materials, other metals, textiles, skins and leather, chemicals, fertilizers, technical fats and oils, rubber, paper, building materials.

c. industrial finished goods. Its weight in the general index is 26 per cent. It includes prices of such commodities as machines, tools, household goods, automobiles, furniture, textiles, shoes. This group is in turn divided into two further sub-groups:

(1) production goods

(2) consumption goods

3. An index of ten sensitive commodity prices. This index, a simple arithmetic mean of relatives, includes the wholesale prices of lead, tin plate, wool, flax, hemp, oxhides, calfskins and various metal scraps.

4. An index of prices of five textiles and of textile raw materials, including cotton yarn, cotton cloth, raw silk and German and Australian wool. This also is a simple arithmetic average of relative prices, on the base, 1924-30 = 100.

5. Indexes of wholesale prices of

a. iron and iron raw materials. This index is a weighted arithmetic average of relative prices, on the base, 1913 = 100.

b. coal. This index is a weighted arithmetic average of relative prices, on the base, 1913 = 100.

6. An index of

a. 'free' prices, that is, of commodity prices not subject to regulation. This index is a weighted arithmetic average of relative prices, on the base, 1926 = 100.

b. commodity prices subject to regulation. The index includes prices of bituminous coal, lignite, domestic iron ore, pig iron, iron mill products, aluminum, fertilizers, industrial oils, cellulose and paper, and building materials. This index is a weighted arithmetic average of relative prices, on the base, 1926 = 100.

7. An index of prices of

a. *imported* raw materials and semi-finished goods. This series includes the prices of English coal, Swedish and Spanish iron ores, non-ferrous metals, textile raw materials, and semi-finished goods, hides and leather, technical oils and fats, rubber. This index is a weighted arithmetic average of relative prices, on the base, 1913 = 100.

b. *domestic* raw materials and semi-finished goods. This includes prices of domestic coal, iron ores, pig iron and other iron products, chemicals, artificial fertilizers, paper, building materials. This index is a weighted arithmetic average of relative prices, on the base, 1926 = 100.

8. A general index of cost of living in Germany. This is a weighted arithmetic average of relative prices on the base, 1913-14 = 100. The index pertains to a fixed budget covering expenditures for food, rent, heat and light, clothing and miscellaneous items of a worker's family of five.

9. A general index of stock prices. It is calculated as a simple arithmetic mean of the monthly average prices of 329 representative stocks on the Berlin Bourse, converted into relatives on the base, 1924-26 = 100. Stock quotations were suspended from July 1, 1931 to March 1932.

*Number of specific cycles.* Twelve of the fourteen price series that cover the years 1924-33 passed through two cycles. The indexes of textile and of coal prices skip the first post-inflation reference-cycle in that they show decline throughout the period 1924-26. The indexes of 'free' and regulated prices, which go back only to the beginning of 1926, show one cycle, 1926-33. In most of the series the cycles are clearly defined; some of the indexes of prices subject to regulation, such as iron and coal, show less definite cycles.

*Duration.* The duration of the cycle covering the years 1924-26, apparent in twelve series, varies between 18 and 29 months, with an average duration of 23 months for the twelve series. Duration of the second cycle, 1926-32, apparent in all the series, ranges between 65 and 85 months, with an average of 76 months. The cycles in most of the series are somewhat shorter than their corresponding reference-cycles. Most of the series, too, indicate that in both cycles the period of contraction was longer than the period of expansion. This is especially pronounced in the second cycle, in which ten series show a phase of contraction more than twice as long as the phase of expansion.<sup>21</sup> The greater length of contraction is evidence of the tendency towards price decline throughout the post-inflation period. It is not nearly so apparent in series of prices subject to

<sup>21</sup> Prices of agricultural products, textiles and industrial stocks are characterized by declines of extremely long relative duration.

TABLE 12

## CYCLICAL BEHAVIOR OF SERIES RELATING TO COMMODITY AND SECURITY PRICES, 1924-1933

(1) SERIES	(2) NUMBER AND DELIMIT- ING DATES OF SPE- CIFIC CYCLES	(3) DURATION IN MONTHS			(4) LEAD (-) OR LAG (+) OF SPECIFIC TURNING POINTS WITH RESPECT TO REFER- ENCE TURNING POINTS IN MONTHS			(5) CONFORMITY TO BE- HAVIOR OF THE TWO REFERENCE CYCLES			(6) AMPLITUDE OF SPECIFIC CYCLE		
		EX- PAN- SION	CON- TRACTION	FULL CYCLE	FIRST LOW	HIGH	SECOND LOW	REFERENCE CYCLE EX- PANSION	REFERENCE CYCLE CON- TRACTION	EX- PAN- SION	CON- TRACTION	FULL CYCLE	
		1. General index of wholesale prices	2 Jul'24-Apr'26 May'26-Apr'33 <sup>1</sup>	13 27	8 57	21 84	+8 +1	+5 +4	+1 +8	+	+	+11 +8	-8 -42
2. Indexes of wholesale prices													
a. agricultural products	2 Jun'24-Feb'26 Mar'26-Jan'33	7 10	13 73	20 83	+7 -1	-2 -15	-1 +5	+	+	+28 +15	-11 -50	39 65	
b. raw materials and semi-finished goods	2 Jul'24-Jun'26 Jul'26-Jul'32	6 23	17 50	23 73	+8 +3	-2 +2	+3 -1	+	+	+7 +7	-12 -40	19 47	
c. industrial finished goods	2 Dec'24-Feb'27 Mar'27-Apr'33 <sup>1</sup>	9 20	17 54	26 74	+13 +11	+6 +7	+11 +8	+	+	+6 +13	-12 -34	18 47	
(1) Production goods	2 Nov'24-Mar'27 Apr'27-Apr'33 <sup>1</sup>	10 30	18 43	28 73	+12 +12	+6 +18	+12 +8	+	+	+10 +8	-7 -19	17 27	

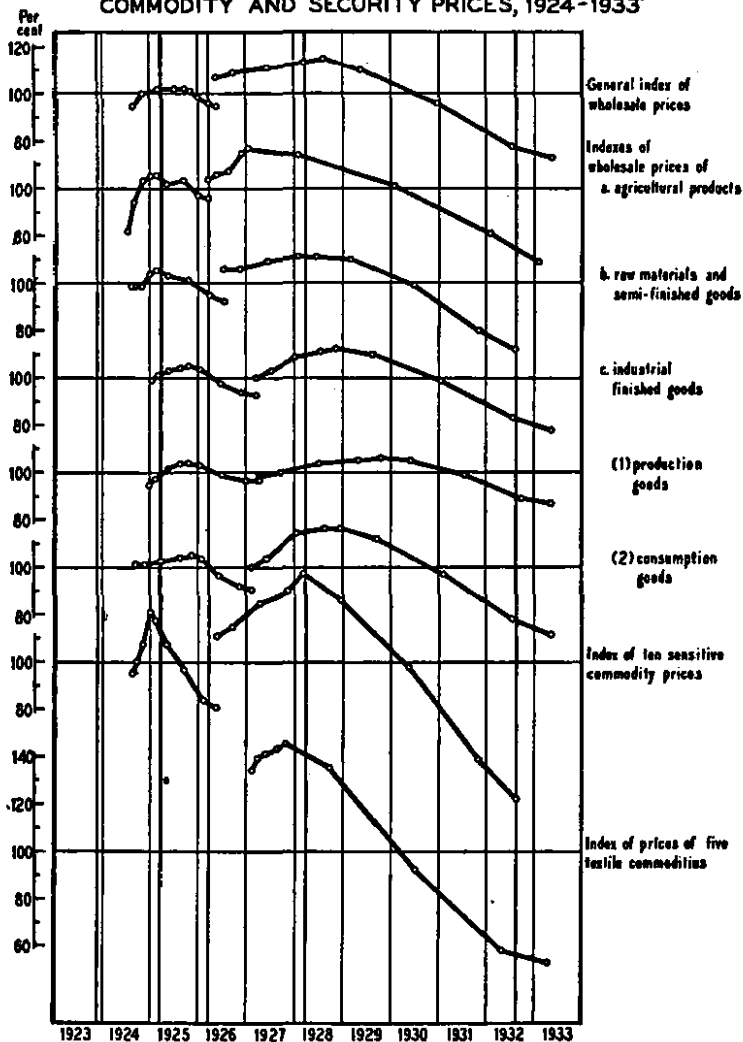
<i>(2) Consumption goods</i>												
	2 Aug'24-Jan'27	14	15	29	+9	+7	+10	+	+	+5	-15	20
	Feb'27-Apr'33 <sup>1</sup>	22	53	75	+10	+8	+8	+	+	+16	-44	60
3. Index of ten sensitive commodity prices	2 Jul'24-Apr'26	6	15	21	+8	-2	+1	+	+	+35	-44	79
	May'26-Jul'32	22	53	75	+1	-1	-1	+	+	+27	-93	120
4. Index of prices of five textile commodities	1 Jan'27-Mar'33 <sup>1</sup>	8	66	74	+10	-6	+7	-	+	+17	-96	113
								+	+			
5. Indexes of wholesale prices												
a. iron	2 Oct'24-Jun'26	6	14	20	+11	+1	+3	-	+	+16	-8	24
	Jul'26-Apr'33 <sup>1</sup>	39	43	82	+3	+18	+8	+	+	+7	-25	32
b. coal	1 Mar'26-May'32	44	30	74	0	+20	-3	-	+	+10	-20	30
								+	+			
6. Indexes of												
a. 'free' prices	1 Dec'26-Feb'33 <sup>1</sup>	13	61	74	+9	-2	+6	+ <sup>2</sup>	+ <sup>2</sup>	+15	-79	94
b. regulated prices	1 Dec'27-May'33 <sup>1</sup>	24	41	65	+21	+21	+9	+ <sup>2</sup>	+ <sup>2</sup>	+6	-22	28
7. Indexes of prices												
a. imported goods	2 Jul'24-Dec'26	6	23	29	+8	-2	+9	+	+	+12	-28	40
	Jan'27-Jul'32	17	50	67	+9	+2	-1	+	+	+13	-72	85
b. domestic goods	2 Oct'24-Jun'26	7	13	20	+11	+2	+3	-	+	+7	-6	13
	Jul'26-Apr'33	40	42	82	+3	+19	+8	+	+	+9	-28	37
8. Cost of living index	2 Feb'24-Mar'26	18	7	25	+3	+5	0	+	+	+18	-5	23
	Apr'26-Apr'33 <sup>1</sup>	36	49	85	0	+12	+8	+	+	+13	-29	42
9. Stock price index	2 Jun'24-Dec'25	7	11	18	+7	-2	-3	-	+	+69	-61	130
	Jan'26-Jun'32	16	62	78	-3	-11	-2	+	+	+88	-103	191

<sup>1</sup> Tentative final low.

<sup>2</sup> Comparison is possible with only the second of the two reference cycles because of the brevity of the series.

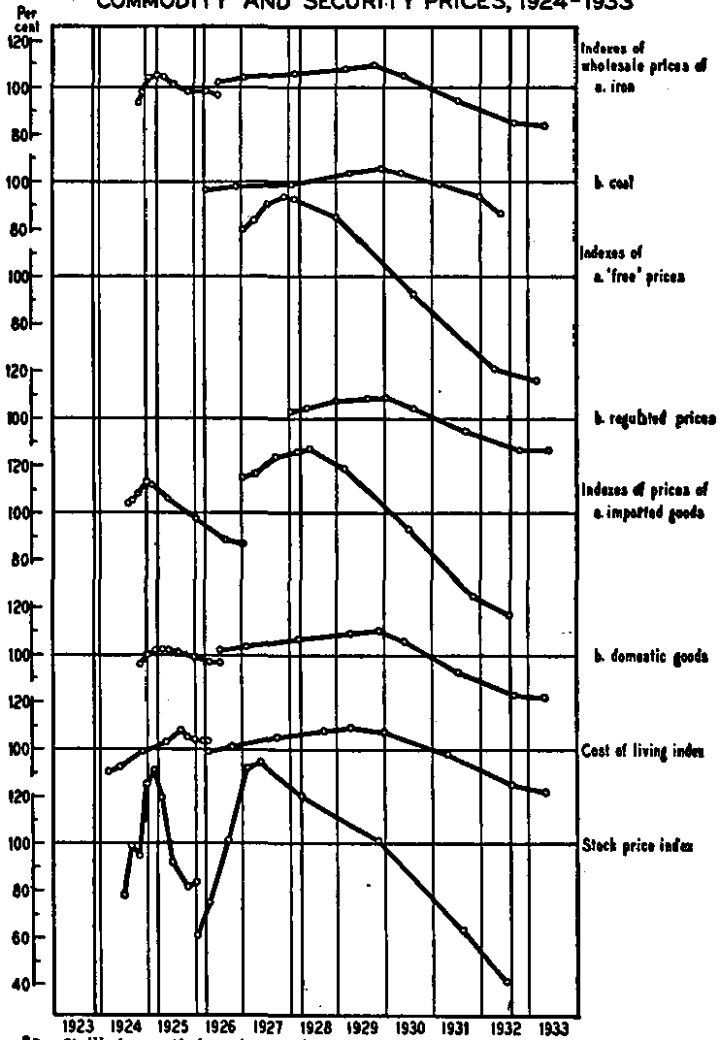
### CHART 4

#### CYCLICAL BEHAVIOR OF SERIES RELATING TO COMMODITY AND SECURITY PRICES, 1924-1933\*



\*See Ch. III, footnote 19, for explanation of construction of charts

**CHART 4 (CONT.)**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO**  
**COMMODITY AND SECURITY PRICES, 1924-1933\***



\*See Ch. III, footnote 19, for explanation of construction of charts



being fixed arbitrarily, which offered more resistance to factors making for decline.

*Timing.* The cyclical turning points of the index of sensitive prices appear to be more closely timed with the low and high points of the reference-cycles than do any of the other price series. Considerable divergence is apparent in the turning points of the indexes of finished goods prices, which show lags of from 6 to 18 months behind the reference points. The series relating to commodities whose prices are regulated—the index of regulated prices, iron and coal price indexes, raw material price index—also manifest a pronounced tendency to lag behind reference points. In fact, the cyclical movement in all the price series appears to have lagged somewhat with respect to the reference-cycles, there being more than three times as many instances of lag as of lead at the reference points. A tendency to lead is apparent in the stock price index. The average deviation of the turning points of the series from the reference turning points is least in the case of the high point in the 1924–26 cycle, amounting to but 3.5 months. The next best defined turning point is the low between the two cycles; in this instance the mean deviation is 6.1 months. The greatest scatter of turning points occurs in the high of the second cycle, where the mean deviation is 10.4 months.

*Conformity.* Nine out of fourteen series show cycles conforming to the reference-cycle, 1924–26. The exceptions are the indexes of prices of textiles,

iron, coal, domestic goods and stocks. Each of these shows a net decline during the reference period of expansion, 1924-25.<sup>28</sup> All sixteen series conform to the second reference-cycle.

*Amplitude.* A comparison of the cycles apparent in the various price series indicates that the swing in the second post-inflation cycle was considerably wider than in the first cycle. Averages of the total amplitudes of rise and fall in the twelve series showing two cycles are: 36.8 per cent for the first cycle, and 66.9 per cent for the second cycle. Differences between the amplitudes of expansion and of contraction are especially marked in the second cycle, during which all sixteen series show a relatively severe decline. The average amplitude of expansion in this cycle is 17.0 per cent; of contraction, 49.7 per cent. The price indexes of agricultural products, sensitive commodities, textiles, imported goods and stocks, and free prices, show especially wide swings in both cycles. Small cyclical amplitudes are evident in the indexes of regulated prices, iron and coal and production goods prices.

*General observations.* Most of the price series, then, have passed through two cycles in the post-inflation years—cycles that correspond fairly closely to the reference-pattern. Cyclical fluctuations in prices

<sup>28</sup> The phase of expansion in the first post-inflation cycle in prices was relatively slow in getting under way. Many prices, after a short rise in the early months of 1924, fell sharply during the middle of that year, possibly in continuation of adjustment to the gold mark basis.

subject to the relatively free interplay of competing market factors show closer conformity than do cycles in prices subject to restraint by government authority or business organizations. Turning points of the price cycles have had a tendency to lag behind the turning points in the reference-pattern, and this is especially pronounced in the series of regulated prices. Only the index of stock prices has shown a tendency towards cyclical lead. Furthermore, as might be expected, cyclical amplitude is greater in 'free' than in regulated prices. But the amplitude of the long contraction in the cycle 1926-32 has been relatively great in all series. On the whole, the price series show smooth cyclical movements, that is, they are disturbed by few irregular fluctuations.

#### *d. Employment and Wages*

The employment and wages group includes five series of employment and two series of wages:

1. Unemployment in trade unions. This series gives the number of unemployed as a percentage of the total membership of reporting unions. The percentages are end-of-the-month figures for male and female workers.
2. Part-time employment in trade unions. The figures, as above, are end-of-the-month percentages of total membership.
3. Applicants for positions. This series gives the number of male applicants per 100 openings during the course of each month, reported by employment agencies.
4. Full unemployment in: a. production goods industries; b. consumption goods industries. The two series are end-of-

the-month percentages of trade union membership. They exclude seasonal industries and are available only since 1925. 5. Regulated wages per hour: a. skilled; b. unskilled workers. The series are given in *Pfennige* per hour and are weighted arithmetic averages of wages for full-time workers in important industries.

*Number of specific cycles.* Since unemployment tends to increase when general business activity declines, and to fall off when general activity expands, the direction of the cyclical movement in unemployment series is inverse to that of concurrent cycles in most other economic series. If we delimit an unemployment cycle from high to high (rather than from low to low), then two cycles that agree quite closely in temporal limits with the post-inflation reference-cycles are apparent in the various series reflecting the number of jobless workers. The series of unemployment in production and consumption goods industries begin only in January 1925; nevertheless, they give evidence of the cyclical contraction during 1925-26.

The two wage series show only one cycle during the entire period 1924-33. However, both show a pronounced retardation in their advance during the reference-cycle contraction of 1925-26 (see Chart 1).

*Duration.* The cyclical fluctuations in the unemployment series agree closely with the reference-cycle pattern in respect of their total duration and the relative duration of their phases of expansion and contraction. The length of the contraction in

TABLE 13

## CYCLICAL BEHAVIOR OF SERIES RELATING TO EMPLOYMENT AND WAGES, 1924-1933

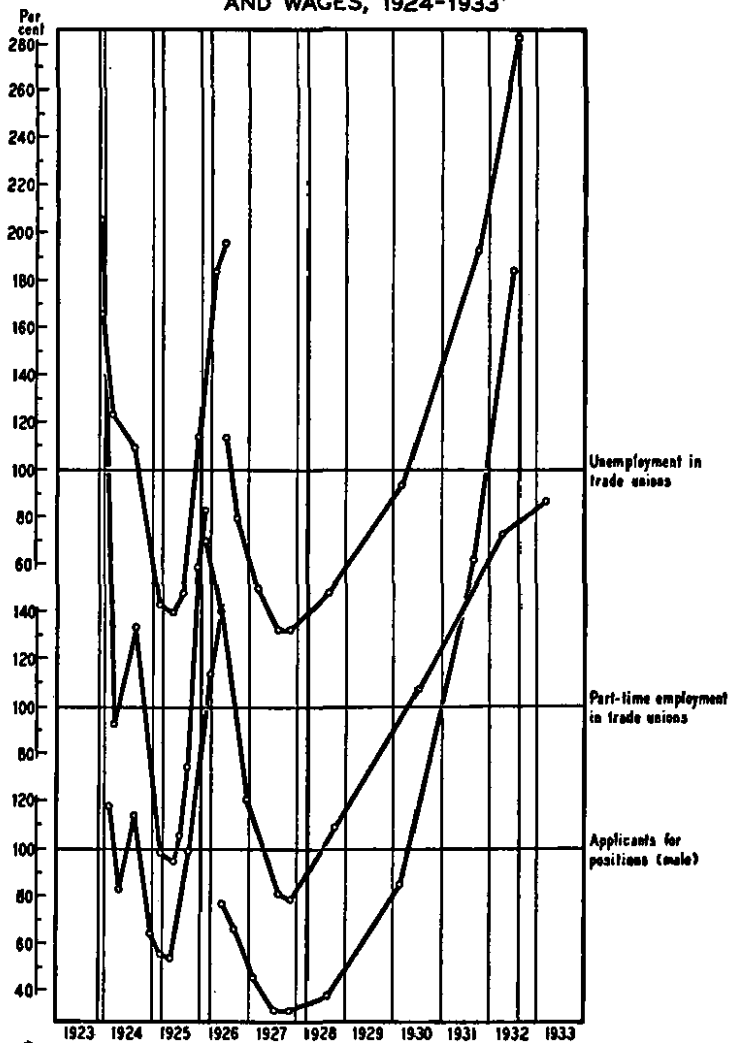
(1) SERIES	(2) NUMBER AND DELIMIT- ING DATES OF SPE- CIFIC CYCLES	(3) DURATION IN MONTHS			(4) LEAD (-) OR LAG (+) OF SPECIFIC TURNING POINTS WITH RESPECT TO REFER- ENCE TURNING POINTS IN MONTHS			(5) CONFORMITY TO BE- HAVIOR OF THE TWO REFERENCE CYCLES			(6) AMPLITUDE OF SPECIFIC CYCLE		
		EX- PAN- SION	CON- TRACTION	FULL CYCLE	FIRST LOW	SECOND HIGH	LOW	REFERENCE CYCLE EX- PANSION	REFERENCE CYCLE CON- TRACTION	EX- PAN- SION	CON- TRACTION	FULL CYCLE	
		1. Unemployment in trade unions	2 Nov'23-Jun'26 Jul'26-Jul'32	18 16	13 57	31 73	0 +3	+2 -5	+3 -1	- -	- -	-146 -94	+166 +260
2. Part-time employment in trade unions	2 Nov'23-Jan'26 Feb'26-Feb'33 <sup>1</sup>	18 21	8 64	26 85	0 -2	+2 -5	-2 +6	- -	- -	-359 -160	+153 +171	512 331	
3. Applicants for positions (male)	2 Jan'24-May'26 Jun'26-Jun'32	13 17	15 56	28 73	+2 +2	-1 -5	+2 -2	- -	- -	-93 -52	+160 +327	253 379	
4. Full unemployment in <i>a. production goods industries</i>	1 Jun'26-Sept'32	17	58	75	+3	-4	+1	-3	-3	-91	+262	353	

.												
<i>b. consumption goods industries</i>												
1 May'26-Oct'32	17	60	77	+2	-5	+2	- <sup>2</sup>	- <sup>2</sup>	-89	+212	301	
5. Regulated wages												
<i>a. skilled workers</i>												
1 Feb'24-Apr'33 <sup>1</sup>	81	29	110	+3			+	-	+56	-27	83	
					+32	+8	+	+				
<i>b. unskilled workers</i>												
1 Mar'24-Apr'33 <sup>1</sup>	80	29	109	+4			+	-	+57	-26	83	
					+32	+8	+	+				

<sup>1</sup> Tentative final low.

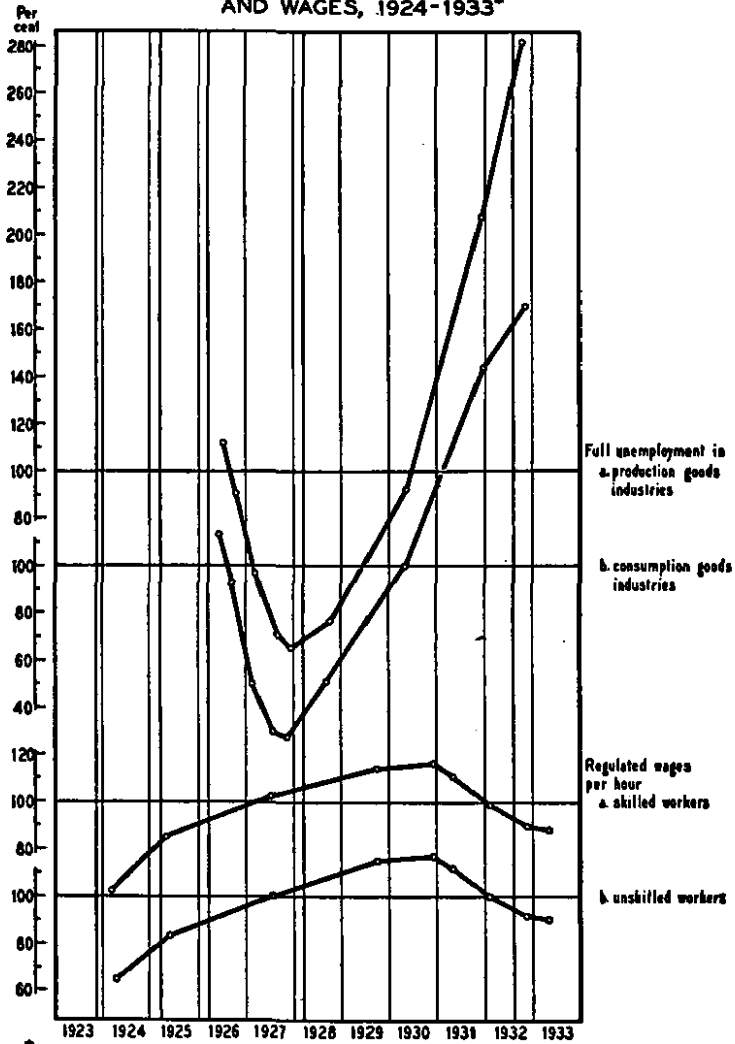
<sup>2</sup> Comparison is possible with only the second of the two reference cycles because of the brevity of the series.

**CHART 5**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO EMPLOYMENT**  
**AND WAGES, 1924-1933\***



\*See Ch. III, footnote 19, for explanation of construction of charts

**CHART 5 (CONT.)**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO EMPLOYMENT**  
**AND WAGES, 1924-1933\***



\*See Ch. III, footnote 18, for explanation of construction of charts



the second post-inflation cycle is somewhat more pronounced in these series than in the corresponding reference-cycle. The five unemployment series show an expansion in this cycle ranging from 16 to 21 months, and a contraction ranging from 56 to 64 months. Corresponding figures for the reference-cycle 1926-32 are 24 and 53 months. The wages series show one long cyclical expansion period (80 and 81 months) and a relatively short contraction (29 months in both).

*Timing.* The turning points of the unemployment cycles (considered as inverted) deviate but little from the corresponding reference lows and highs. The average deviations are: from reference high of March 1925, 1.7 months; from reference low of March 1926, 2.4 months; from reference high of March 1928, 4.8 months; from reference low of August 1932, 2.4 months. The high point in the single cycle in wages is late—November 1930. The retardation of the expansion notable in both wage series, probably a reflection of the 1925-26 contraction in general business, began approximately in November 1925 and ended about February 1927. Thus its terminal points lag considerably behind the high and low points delimiting the reference contraction, March 1925 and March 1926.

*Conformity.* The cycles apparent in the various unemployment series conform inversely (as is to be expected) to the corresponding reference-cycles. The wage series' cyclical movement conforms to the sec-

ond reference-cycle, for it shows a net rise during the reference expansion and a net fall during the reference contraction. Also, it shows a degree of conformity to the first cycle, as its rate of advance during the reference expansion (1924-25) was greater than its rate of advance during the reference-cycle contraction (1925-26).

*Amplitude.* Outstanding in the unemployment series is the greater cyclical amplitude of contraction than of expansion. In both cycles, with one exception (the first cycle in part-time employment), the rise in contraction was considerably greater than the fall in expansion. The cyclical amplitude in the contraction phase of the second cycle was especially severe. However, the *rate* of cyclical fall and rise was greater in the first cycle than in the second. Cyclical amplitude of unemployment in production goods industries exceeded that of unemployment in consumption goods industries by 8 per cent in expansion and 20 per cent in contraction. The amplitude of the cycle in wages was much milder than the amplitude in the unemployment cycles.

*General observations.* The cyclical behavior of employment in the years 1924-33 is thus seen to be fairly consistent with what has already been established as the characteristics of the general cycles in German economy in the post-inflation period. The only notable exception is in respect of amplitude: most of the unemployment series show greater rise in the contraction of 1925-26 than fall in the expansion

sion of 1924-25. In many other types of series examined, that contraction is relatively mild. Doubtless, a rising trend in unemployment throughout the post-inflation period tended to increase the amplitude of contraction. The cyclical behavior of regulated, or tariff, wages resembles that of regulated prices, in that the former did not conform closely to the reference-pattern, that changes in their direction of cyclical movement seem to have lagged considerably behind similar changes in the reference-cycles and that their cyclical amplitude was relatively small.

Irregular movements superimposed upon the cyclical swings in unemployment correspond with those noted in the discussion of the cyclical behavior of industrial production. Unemployment rose sharply in the middle of 1924 and fell off in the autumn. Again, unemployment declined for several months in the middle of 1929 (beyond a mere seasonal decline), that is, in the midst of a cyclical contraction. These irregularities appear to reflect, first, the halting recovery of 1924, and second, the widespread compensatory revival that followed the winter of 1928-29 (see Ch. II, Part A, Sec. 4, a).

#### *e. Business Organization and Enterprise*

Five series comprise the group, Business Organization and Enterprise:

1. Business enterprises
  - a. a monthly series of the organization of new co-partnerships, individual proprietorships.

- b. a monthly series of the dissolution of co-partnerships, individual proprietorships.
- 2. Business failures—a monthly series of the number of failures of all types of business organization.
- 3. An annual series of the percentage of
  - a. profits to capital of the German joint-stock companies (*Aktiengesellschaften*), in the fiscal years, July 1 to June 30, 1924–32.
  - b. losses to capital of the German joint-stock companies, in the fiscal years, July 1 to June 30, 1924–32.

*Number of specific cycles.* Two series, organization of enterprises and business failures, show two cycles in the period 1924–33. The cycles in business failures are, of course, inverted. Dissolution of business enterprises shows three cycles in the post-inflation period; middle of 1924 to end of 1927, end of 1927 to early 1929, early 1929 to autumn of 1932. These three cycles are superimposed upon one long swing, 1924–32. The two annual series, percentage profits and losses of the joint-stock companies, which cover only the fiscal years from 1925–26 to 1929–32, show one cycle, 1926–32.

*Duration.* The two cycles in organization of enterprises and business failures agree fairly well in temporal delimitation with the post-inflation reference-cycles. In both series the period of contraction in the cycle 1926–32 is much longer than the period of expansion. Dissolution of enterprises is characterized by two long cycles and one short cycle. The annual profits and losses series show an expansion

TABLE 14

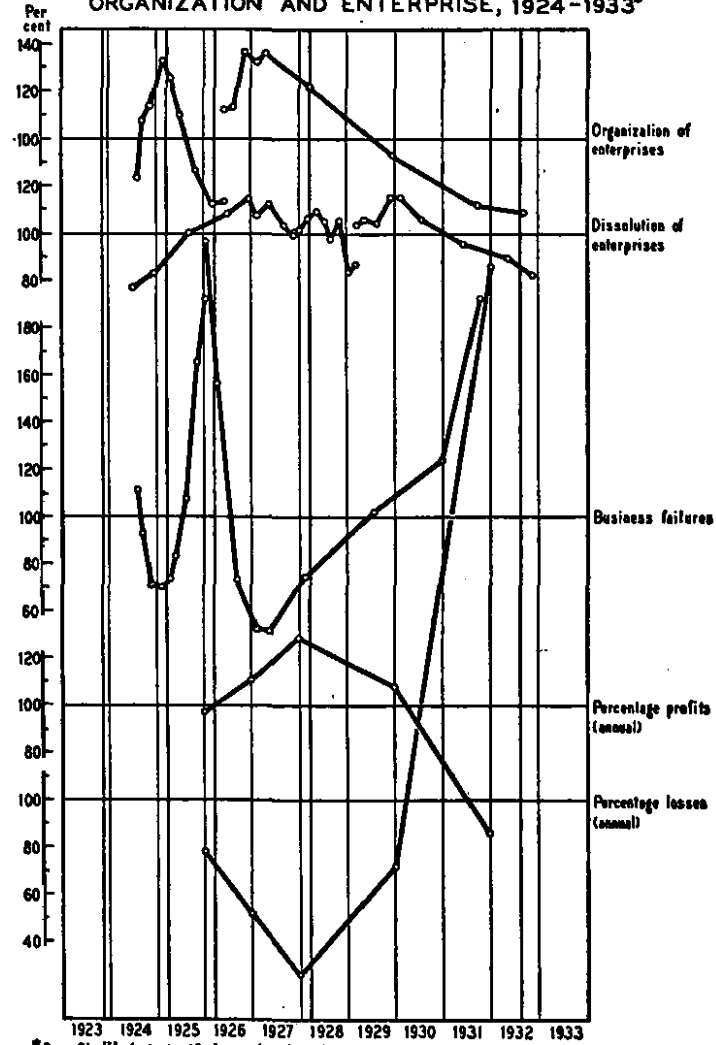
## CYCLICAL BEHAVIOR OF SERIES RELATING TO BUSINESS ORGANIZATION AND ENTERPRISE, 1924-1933

(1) SERIES	(2) NUMBER AND DELIMIT- ING DATES OF SPE- CIFIC CYCLES	(3) DURATION IN MONTHS			(4) LEAD (-) OR LAG (+) OF SPECIFIC TURNING POINTS WITH RESPECT TO REFER- ENCE TURNING POINTS IN MONTHS			(5) CONFORMITY TO BE- HAVIOR OF THE TWO REFERENCE CYCLES			(6) AMPLITUDE OF SPECIFIC CYCLE		
					FIRST LOW	HIGH	SECOND LOW	REFERENCE CYCLE EX- PANSION	REFERENCE CYCLE CON- TRACTION	EX- PAN- SION	CON- TRACTION	FULL CYCLE	
													CON- TRACTION
1. a. <i>Organization of enterprises</i>	2 Jul'24-May'26	8	14	22	+8	0	+2	+	+	+79	-64	143	
	Jun'26-Aug'32	10	65	75	+2	-12	0	+	+	+35	-83	118	
b. <i>Dissolution of enterprises</i>	3 Jun'24-Oct'27	29	11	40	+7	+20	+19	+	-	+49	-30	79	
	Nov'27-Feb'29	8	8	16	+19	+3		-	+	+25	-36	61	
	Mar'29-Oct'32	11	33	44			+2			+25	-48	73	
2. <i>Business failures</i>	2 Jul'24-Dec'25	8	9	17	+8	0	-3	+	-	-51	+126	177	
	Jan'26-Sept'31	16	53	69	-3	-11	-11	-	-	-170	+173	343	
3. a. <i>Percentage profits</i>	1 1925/26-1931/32 <sup>1</sup>	2 yrs	4 yrs	6 yrs	0	0	0	+ <sup>2</sup>	+ <sup>2</sup>	+31	-82	113	
b. <i>Percentage losses</i>	1 1925/26-1931/32 <sup>1</sup>	2 yrs	4 yrs	6 yrs	0	0	0	- <sup>2</sup>	- <sup>2</sup>	-53	+301	354	

<sup>1</sup> Tentative final low.<sup>2</sup> Comparison is possible with only the second of the two reference cycles because of the brevity of the series.

### CHART 6

#### CYCLICAL BEHAVIOR OF SERIES RELATING TO BUSINESS ORGANIZATION AND ENTERPRISE, 1924-1933\*



\*See Ch. III, footnote 19, for explanation of construction of charts

period of two years and a contraction period of four years.

*Timing.* Two series, as indicated above, agree with the reference-pattern in respect of the number of cycles. Their high point in the first cycle, and low point between the two cycles 1924-26 and 1926-32, show small deviation from the corresponding reference turning points, but the deviation of their high point from the reference high in the cycle 1926-32 is large. Turning points of the two annual series agree closely with the lows and high of the reference-cycle 1926-32.

*Conformity.* Two series, organization of enterprises and the annual series of profits, conform positively to the second post-inflation reference-cycle; the first also conforms to the reference-cycle 1924-26. The business failures series shows a net rise during the expansion as well as during the contraction period of the reference-cycle 1924-26. However, its *rate* of rise in the contraction is greater than in the expansion. During the reference-cycle 1926-32, business failures and annual losses conform inversely, as is to be expected.

*Amplitude.* Organization of enterprises and business failures, especially the latter, show relatively wide cyclical swings. The percentages of profits and losses, too, in view of the fact that they are annual series, show a large amplitude in the cycle 1926-32.

*General observations.* The characteristics of the reference-cycle 1926-32, then, are definitely reflected

in the behavior of all the above series except dissolution of enterprises. The preceding reference-cycle, 1924-26, is less clearly apparent in the three series covering that period.

### *f. Domestic Trade*

Ten series, reflecting various aspects of merchandising, volume of trade and transportation, have been considered as representative of domestic trade activity in Germany during the post-inflation period.

#### A. MERCHANDISING

1. Sales of consumers' cooperatives: a monthly series of the average weekly sales per member of the *Zentralverband der deutschen Konsumgenossenschaften*, which is by far the largest of the German associations of consumers' cooperatives.
2. Sales of department stores: a monthly index (on the base, 1925 = 100) of the total sales of all German department stores.

#### B. VOLUME OF TRADE

3. Reichsbank clearings: a monthly series of the volume of funds transferred through the clearing section of the Reichsbank. These clearings represent, in general, settlements between banks and the larger business enterprises.
4. Postal check traffic: a monthly series of the volume of funds transferred through the postal check system, which is the ordinary means of settling small accounts other than by cash.
5. Bills drawn: a series of the volume of domestic bills drawn each month, based upon the returns from the stamp tax on bills of exchange.



6. Value of goods exchanged: a quarterly series of the estimated volume of sales of goods, based upon the yield of the turnover tax.

#### C. TRANSPORTATION

7. Car loadings: a monthly series of the average daily number of Reichsbahn freight cars put at the disposal of shippers.

8. Railway freight traffic: a monthly series of the total volume of goods, in tons, carried by the Reichsbahn.

9. Railway freight receipts: a monthly series of the total income of the Reichsbahn from the transportation of goods.

10. Railway passenger receipts: a monthly series of the total income of the Reichsbahn from the transportation of passengers and baggage.

*Number of specific cycles.* Six series—department store sales, postal check traffic, and the four transportation series—show two well-defined cycles during the period 1924–32. These two cycles run parallel to the post-inflation reference-pattern. Superimposed on the contraction phase of the second cycle apparent in the freight transport series is a marked movement of decline and rise from the autumn of 1928 to the summer of 1929. The three series, sales of consumers' cooperatives, Reichsbank clearings and value of goods exchanged, show but one cycle in the years 1924–32. However, the expansion phase in all three series is interrupted by a retardation during the winter of 1925–26. The series, bills drawn, shows three cycles from 1924 to 1933.

*Duration.* The two specific cycles shown by the six series noted above agree fairly well with the ref-

erence-cycles in respect of total duration. The first cycle is short, ranging between 22 and 34 months, and the second cycle is long, varying between 72 and 85 months. Furthermore, in all but one of these series, the expansion phase in the first cycle is somewhat longer than the contraction phase; but in the second cycle there is less agreement with the reference-pattern in this respect, for in four of the six series expansion is relatively long. The single cycle apparent in three series covers the entire post-inflation period. It has an expansion of about 66 months and a contraction of approximately 43 months. The duration of the first of three cycles apparent in bills drawn agrees closely with that of the reference-cycle 1924-26.

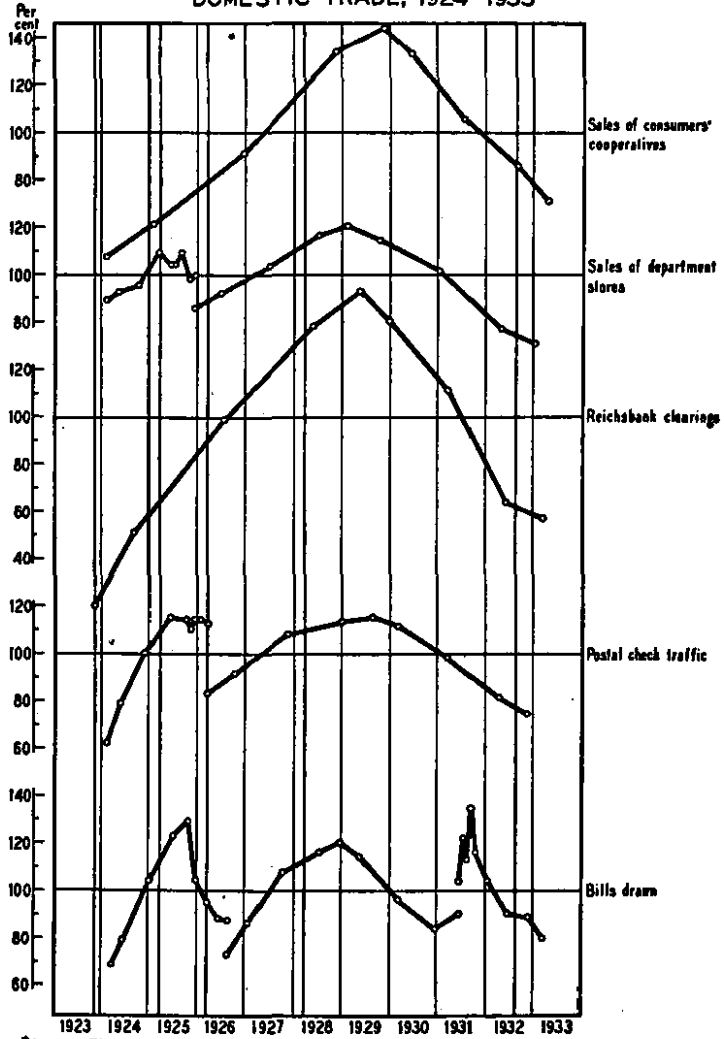
*Timing.* Low and high points of the series with two cyclical fluctuations show much the same relation to reference turning points as has been noted in most other series. The high point of the first cycle and the subsequent low deviate but slightly from the corresponding reference high and low. Their mean deviations are, respectively, 2.9 months and 2.3 months. The timing of the high of the second cycle, however, varies considerably from one series to another. The average deviation of this cyclical point (in the seven series) from the reference high is 9.4 months; most of this deviation is accounted for by lags behind the reference point. The final low point deviates much less from the corresponding reference point—3.5 months. The high point and final

TABLE 15  
CYCLICAL BEHAVIOR OF SERIES RELATING TO DOMESTIC TRADE, 1924-1933

(1) SERIES	(2) NUMBER AND DELIMIT- ING DATES OF SPE- CIFIC CYCLES	(3) DURATION IN MONTHS			(4) LEAD (-) OR LAG (+) OF SPECIFIC TURNING POINTS WITH RESPECT TO REFER- ENCE TURNING POINTS IN MONTHS			(5) CONFORMITY TO BE- HAVIOR OF THE TWO REFERENCE CYCLES			(6) AMPLITUDE OF SPECIFIC CYCLE		
		EX- PAN- SION	CON- TRACTION	FULL CYCLE	FIRST LOW	HIGH	SECOND LOW	REFERENCE CYCLE EX- PANSION	REFERENCE CYCLE CON- TRACTION	EX- PAN- SION	CON- TRACTION	FULL CYCLE	
<b>A. MERCHANDISING</b>													
1. Sales of consumers' cooperatives	1 Jan'24-Mar'33 <sup>1</sup>	69	41	110	+2								
						+19	+7		+	-	+105	-78	
									+	+		183	
2. Sales of department stores	2 Jan'24-Nov'25 Dec'25-Dec'32 <sup>2</sup>	16 38	6 47	22 85	+2 -4	+2 +10	-4 +4		+	+	+37 +43	-22 -57	
									+	+		59	
									+	+		100	
<b>B. VOLUME OF TRADE</b>													
3. Reichsbank clearings	1 Oct'23-Feb'33	68	46	112	-1								
						+13	+6		+	-	+161	-117	
									+	+		278	
4. Postal check traffic	2 Jan'24-Feb'26 Mar'26-Oct'32	20 41	5 39	25 80	+2 -1	+6 +16	-1 +2		+	+	+73 +37	-9 -47	
									+	+		82	
									+	+		84	
5. Bills drawn	3 Feb'24-Jul'26	19	10	29	+3	+6	+4		+	+	+81	-51	
									+	+		132	

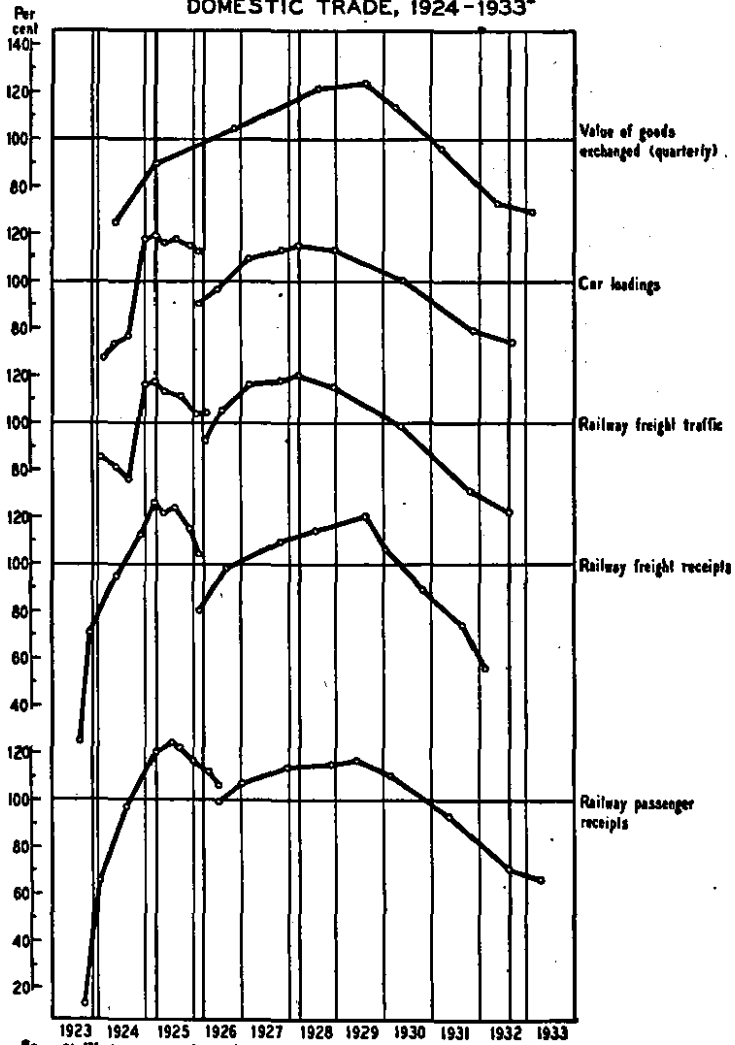
	Aug'26-May'31	28	30	58	+4	+8		+	+	+50	-51	101
	Jun'31-Feb'33 <sup>1</sup>	4	17	21			+6			+53	-55	108
6. Value of goods exchanged	1 IQ'24-IVQ'32 <sup>1</sup>	63	42	105	+3			+	+	+60	-55	115
						+14	+3	+	+			
C. TRANSPORTATION												
7. Car loadings	2 Jan'24-Jan'26	13	11	24	+2	-1	-2	+	+	+61	-12	73
	Feb'26-Aug'32	25	54	79	-2	-1	0	+	+	+30	-47	77
8. Railway freight traffic	2 Jan'24-Mar'26	13	13	26	+2	-1	0	+	+	+43	-20	63
	Apr'26-Jul'32	23	53	76	0	-1	-1	+	+	+36	-67	103
9. Railway freight receipts	2 Jul'23-Jan'26	19	11	30	-4	-1	-2	+	+	+115	-28	143
	Feb'26-Jan'32	42	30	72	-2	+16	-7	+	+	+46	-71	117
10. Railway passenger receipts	2 Aug'23-Jun'26	22	12	34	-3	+3	+3	+	+	+123	-26	149
	Jul'26-Mar'33 <sup>1</sup>	35	46	81	+3	+14	+7	+	+	+27	-60	87
<sup>1</sup> Tentative final low.												

**CHART 7**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO**  
**DOMESTIC TRADE, 1924-1933\***



\*See Ch. II, footnote 19, for explanation of construction of charts

**CHART 7 (CONT.)**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO**  
**DOMESTIC TRADE, 1924-1933\***



\*See Ch. III, footnote 19, for explanation of construction of charts

low point in the three one-cycle series lag considerably behind the second reference-cycle high.

*Conformity.* The movement of the cycles in all ten series conforms closely to the reference-pattern. In only two series does a specific cycle fail to run a course parallel to the contemporary reference-cycle, namely: Reichsbank clearings and sales of consumers' cooperatives do not show net declines during the first reference contraction, 1925-26. But even in these two series the *rate* of rise was less during that phase than it had been during the reference period of expansion.

*Amplitude.* In all series passing through two cycles the amplitude of the first expansion is considerably greater than the amplitude of the subsequent contraction. This is especially marked in the transportation series. The second contraction phase in all these series is of greater cyclical amplitude than the preceding expansion. Furthermore, the *rate* of rise and fall in the first cycle is greater in every instance than in the second cycle. Thus there is close agreement with the observations already made regarding the relative amplitudes of the two post-inflation cycles. Wide swings are evident in the three series with a single cycle each, and in the only series that has three cycles.

*General observations.* The various series representing merchandising, volume of trade and railway transportation, then, afford further evidence of the significance of a 'reference-cycle pattern'. In general,

there is seen to be close agreement in cyclical characteristics, both between series in this group and between them and those representing other types of economic activity. 'Irregular movements' in the cycles of the railway freight series are similar to those apparent in series of industrial production, employment and foreign trade: a sharp decline in the middle months of 1924, the period of 'halting revival', and a fall and rise from the autumn of 1928 to the summer of 1929. Both of these movements are evident, although somewhat less so, in the other series of this group. The series of the volume of trade show a sudden rise in the autumn of 1931—probably a reflection of widespread efforts to liquidate accounts after the summer credit crisis. This explains the pronounced cyclical rise in the volume of bills drawn between June and October 1931.

#### *g. Foreign Trade*

Eight series have been selected as representative of the volume of Germany's imports and exports of goods:

1. Value of imports: giving the monthly value (in millions of Reichsmarks) of the goods imported into Germany. Three main components of this series are also considered here:

a. value of raw materials and semi-manufactured goods imported, which in post-inflation years have constituted approximately half of the total value of imports.

b. value of manufactured goods imported, which have constituted between 14 and 18 per cent of total imports.



- c. value of foodstuffs and beverages imported, comprising from 28 to 35 per cent of total imports.
- 2. Value of exports: giving the monthly value (in millions of Reichsmarks) of goods exported from Germany. Three principal components of this series, too, are here examined:
  - a. value of raw materials and semi-manufactured goods exported, which have constituted between 21 and 26 per cent of the total value of exports in the post-inflation period.
  - b. value of manufactured goods exported, which have constituted approximately 70 per cent of German exports.
  - c. value of foodstuffs and beverages exported, comprising but 5 to 6 per cent of total exports.

*Number of specific cycles.* All eight series—the main series of imports and exports, together with their components—have passed through two cycles in the years 1924–33. All the import series show two clearly-defined cycles, agreeing closely in respect of timing with the reference-cycle pattern. The export series, however, show slightly less conspicuous cycles, the contraction phase of the first cycle in the more important export groups being mild in amplitude and of short duration.

*Duration.* The phases of the specific cycles of the import series agree closely with those of the reference-cycles in total and relative duration. In the more important import groups the expansion and contraction phases of the first cycle are about equal in duration, but in the second cycle contraction is from 121 to 294 per cent longer than expansion. In the export series, the first cycle is approximately one

year longer than the first post-inflation reference-cycle, and the expansion phase of that cycle is of considerably longer duration than the contraction phase. The second cycle apparent in the export groups has lasted approximately six years, and is not yet ended. Here the contraction is already from 49 to 96 per cent longer than expansion.

*Timing.* The low and high points of the import series for the most part show but small deviation from the reference turning points. Turning points of the export series, with only one exception, lag behind the reference points.

*Conformity.* As is evident from the foregoing remarks regarding duration and turning points, the cycles apparent in the import series run a course parallel to the reference-pattern. In the export series, conformity to the first reference-cycle occurs only in exports of manufactured goods and in the relatively unimportant series, exports of foodstuffs and beverages. However, all series conform to the second reference-cycle.

*Amplitude.* The amplitudes of cyclical swings of the import series are notably wider than those of the export series. The full swing in the first cycle is approximately 110 per cent greater in the general import series than in the general export series; in the second cycle, about 31 per cent greater. Amplitudes of both cycles in the component import series are also considerably greater than in the component export series, with one exception: the second cycle

TABLE 16

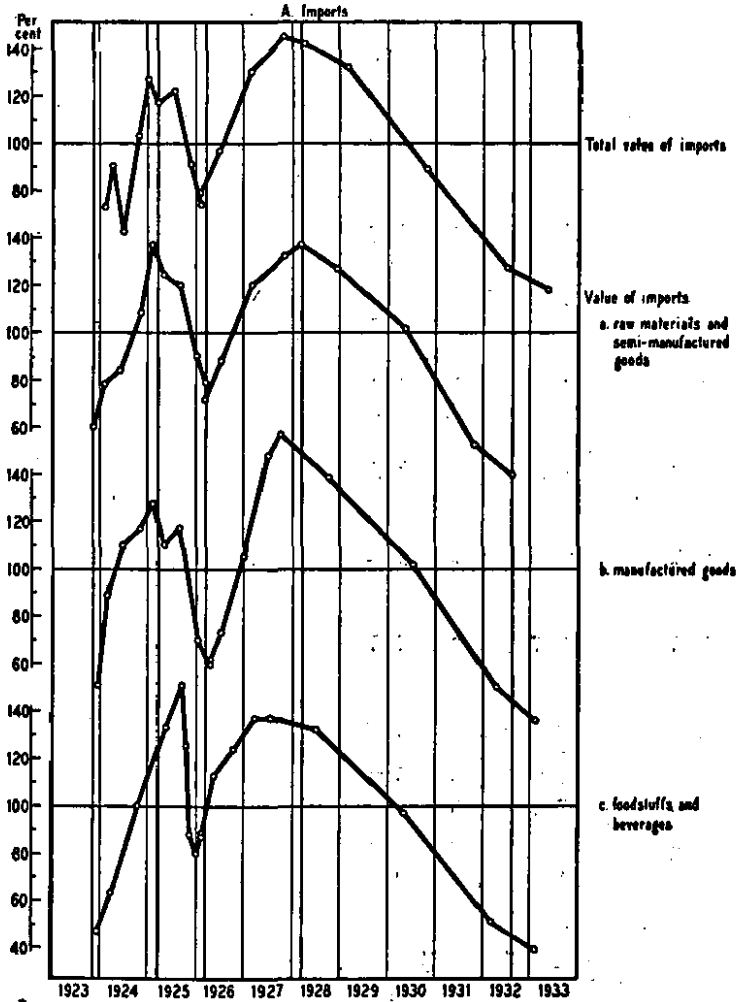
## CYCLICAL BEHAVIOR OF SERIES RELATING TO FOREIGN TRADE, 1924-1933

(1) SERIES	(2) NUMBER AND DELIMIT- ING DATES OF SPE- CIFIC CYCLES	(3) DURATION IN MONTHS			(4) LEAD (-) OR LAG (+) OF SPECIFIC TURNING POINTS WITH RESPECT TO REFER- ENCE TURNING POINTS IN MONTHS			(5) CONFORMITY TO BE- HAVIOR OF THE TWO REFERENCE CYCLES			(6) AMPLITUDE OF SPECIFIC CYCLE								
					EX- PAN- SION									FIRST LOW	SECOND HIGH	SECOND LOW	REFERENCE REFERENCE EX- CYCLE EX- CYCLE CON- PANSION TRACTION SION		
					CON- TRACTION	FULL CYCLE	CON- TRACTION										CON- TRACTION	CON- TRACTION	FULL CYCLE
1. Value of all imports	2 Jan'24-Jan'26	11	13	24	+2	-3	-2	+	+	+80	-65	145							
	Feb'26-Apr'33 <sup>1</sup>	26	61	87	-2	0	+8	+	+	+78	-115	193							
<i>Value of imports</i>																			
<i>a. raw materials</i>																			
<i>and semi-manu-</i>																			
<i>factured goods</i>																			
	2 Oct'23-Feb'26	15	13	28	-1	-2	-1	+	+	+85	-64	149							
	Mar'26-Jul'32	24	53	77	-1	-1	-1	+	+	+76	-108	184							
<i>b. manufactured</i>																			
<i>goods</i>																			
	2 Nov'23-Mar'26	14	14	28	0	-2	0	+	+	+121	-106	227							
	Apr'26-Jan'33	18	64	82	0	-6	+5	+	+	+103	-127	230							
<i>c. foodstuffs and</i>																			
<i>beverages</i>																			
	2 Nov'23-Jan'26	21	5	26	0	+5	-2	+	+	+132	-97	229							
	Feb'26-Jan'33	17	67	84	-2	-9	+5	+	+	+79	-117	196							

2. Value of all exports	2 Jan'24-Feb'27	30	7	37	+2	+16	+11	+	-	+59	-10	69
	Mar'27-Feb'33 <sup>1</sup>	26	46	72	+11	+13	+6	+	+	+50	-97	147
<i>Value of exports</i>												
<i>a. raw materials and semi-manufactured goods</i>												
2	Jan'24-Apr'27	34	5	39	+2	+20	+13	+	-	+132	-43	175
	May'27-Mar'33 <sup>1</sup>	24	47	71	+13	+13	+7	+	+	+47	-113	160
<i>b. manufactured goods</i>												
2	Mar'24-Sept'26	20	10	30	+4	+8	+6	+	+	+56	-18	74
	Oct'26-Feb'33 <sup>1</sup>	31	46	77	+6	+13	+6	+	+	+45	-88	133
<i>c. foodstuffs and beverages</i>												
2	Dec'23-Feb'27	15	23	38	+1	0	+11	+	+	+106	-56	162
	Mar'27-Mar'33 <sup>1</sup>	26	47	73	+11	+13	+7	+	+	+125	-166	291

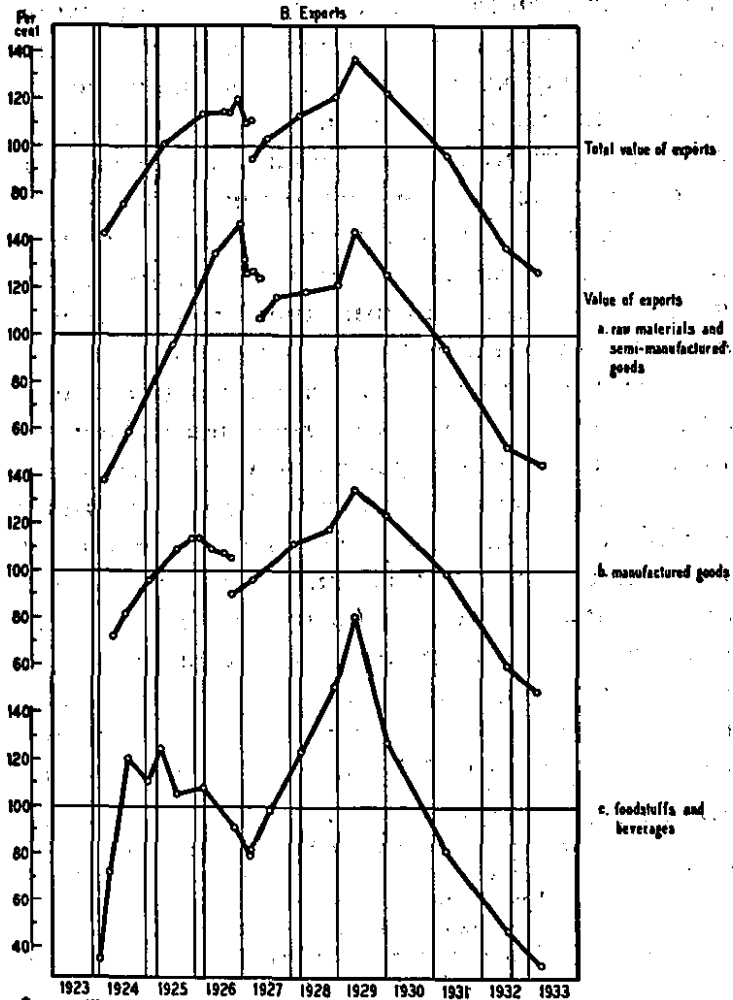
<sup>1</sup> Tentative final low.

**CHART 8**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO**  
**FOREIGN TRADE, 1924-1933\***



\* See Ch. III, footnote 19, for explanation of construction of charts

**CHART 8 (CONT.)**  
**CYCLICAL BEHAVIOR OF SERIES RELATING TO**  
**FOREIGN TRADE, 1924-1933\***



\*See Ch. III, footnote 19, for explanation of construction of charts

in the foodstuffs and beverages group. Except for this group and for the second cyclical contraction in the raw materials group, the amplitudes of both expansion and contraction, as well as of the full swing, are greater in each of the import series than in the corresponding export series. As noted above, the decline in exports during the first cycle was relatively mild. In every instance the amplitude of expansion in the first cycle and of contraction in the second cycle is pronounced. Manufactured goods imported show the widest swings evident in the imports group; on the other hand, manufactured goods exported were the most stable of the three export subdivisions.

*General observations.* Commodity imports, on a value basis, appear to have corresponded closely to the accepted pattern of general business cycles in the post-inflation German economy. Closest conformity is exhibited by the cyclical movement in imports of raw materials and semi-manufactured goods, which are intimately related to fluctuations in industrial production. All import series here considered show wide cyclical amplitudes, especially the imports of manufactured goods, for which demand has probably been relatively elastic.<sup>28</sup> Exports of commodities have

<sup>28</sup> Contraction during the second cycle, evident in the imports of foodstuffs and beverages and of manufactured goods, was moderate until the end of 1929. Thereafter the decline became steeper in foodstuffs and beverages, and much steeper in manufactured goods. Continuing decline of domestic purchasing power must have led to relatively greater reduction in the consumption of manufactured goods from abroad than of imported foodstuffs, many of which appear to be highly essential to Germany. This difference in behavior during contraction

shown less conformity to the reference-pattern. Contraction in the first cycle apparent in the most important export group—manufactured goods—lagged behind the contraction in the first reference-cycle, 1924–26, and was of relatively small amplitude. Although recession in 1926 in the economies of a number of Germany's neighbors may have depressed its export trade somewhat, general business conditions abroad were probably not such as to make for a pronounced reduction in its exports. The second cyclical decline in the volume of exports set in more than a year after contraction had become apparent in general business in Germany. It is likely that this was a reflection of the beginning of recession in mid- or late 1929 in most of the leading industrial nations (see Sec. 4, International Relationships of German Business Cycles). Both import and export series substantiate the observation made above that the amplitudes of the cyclical expansion during 1924 and 1925 and during the contraction since 1928 and 1929 were especially large.

Outstanding irregular movements in the import series are apparent in mid-1924 and from the winter of 1928–29 to late spring of 1929 (see Chart 1). The first of these irregularities is doubtless related to factors making for widespread interruption in the recovery of 1924 (see Ch. II, Part A, Sec. 1, b). The short period of rise, 1928–29, superimposed on the

may offer a measure of the relative elasticities of demand for the two groups of commodities.



contraction that had begun early in 1928 (most marked in imports of raw materials and semi-manufactured goods), is further evidence of the short revival of industrial production and domestic trade that appears to have been compensatory for the effects of the iron industry lockout and the severe winter (see Ch. II, Part A, Sec. 4, a). Another slight revival superimposed upon contraction is apparent in the export series (especially exports of manufactured goods) during 1931 (see Chart 1). Increased pressure to liquidate stocks, together with incentives to sell goods abroad before the imposition of higher tariff duties in certain of Germany's foreign markets, were perhaps factors relevant to this irregular movement.

#### 4. INTERNATIONAL RELATIONSHIPS OF GERMAN BUSINESS CYCLES

A study of the cyclical fluctuations in German economy since the currency stabilization raises several interesting questions concerning the extent of their coincidence with fluctuations in the economies of other countries. Was the course of German fluctuations independent of the economic fortunes of Germany's neighbors? How close was the relationship between German fluctuations and an international cyclical pattern? Is there evidence of increasing temporal conformity between German cycles and the cycles of other countries?

It has often been observed that, before the War, the great business 'crises' had an international sweep. Crises embracing many parts of the world—and particularly those parts considered highly capitalistic—occurred in 1890–91, in 1900–01, in 1907–08 and in 1912–13. Of course, no crisis struck everywhere with equal severity.

Furthermore, there is reason to believe that before the World War there was a tendency towards increasing international similarity in other aspects of cyclical fluctuations. This view is supported by the collection of *Business Annals*, published in 1926 by the National Bureau of Economic Research. In that compilation the course of cyclical business fluctuations is traced over a long period and over a wide area. A digest of contemporary opinions concerning industrial, commercial, labor, credit and agricultural conditions, as well as non-economic occurrences, is carried back to 1790 for the United States and England; to 1840, for France; to 1853, for Germany; to 1867, for Austria; and to 1890, for Italy, The Netherlands, Russia, Sweden, Canada, Australia, South Africa, Argentina, Brazil, British India, Japan and China. In his introductory chapter, Wesley C. Mitchell concludes that "the international similarity in phase in business cycles increased on the whole with the passage of time", and that "the network of business relations has been growing closer and

firmer, at the same time that it has been stretching over wider areas".<sup>24</sup>

Dr. Mitchell's study reveals a good deal of similarity between the German cyclical movement and the 'international pattern'. A comparison is made between German cycles and the cycles of the United States, England, France and Austria, during the period 1867-1925. Fifty-nine years of the economic life of four pairs of nations, making a total of 236 years, were considered. Of this number, there were 104 years of agreement in cyclical phase of Germany and four other countries, 91 years of partial agreement, and 41 years of opposition. Comparison of England with the same set of countries shows 120 years of agreement, 81 years of partial agreement, and 35 years of opposition. For France, the figures are: agreement, 101 years; partial agreement, 89; and opposition, 46; for the United States: agreement, 90 years; partial agreement, 84 years; and opposition, 62 years. That is, the German cyclical movement shows a high correlation with the cycles of the other countries—a correlation that is only slightly less than that of England.

Furthermore, Dr. Mitchell has sketched what he calls an 'international pattern' of business cycles for the period 1890-1925. This pattern presents four cycles between 1890 and 1918. Germany's economic fluctuations correspond quite closely with this pattern, except that there was one more cycle in Ger-

<sup>24</sup> Pp. 90, 96.

many, from the beginning of 1904 to the end of 1905, than was called for by the 'international pattern'.

Thus, until the end of the War, German business cycles seemed to be in rather close agreement with the so-called international cycles. Dr. Mitchell's study would indicate that this similarity of cyclical movement was disrupted after the Armistice. "The breaking of economic bonds by the War, and the tardiness of their restoration after the Armistice, interfered with this process of synchronizing cycles. But the non-economic factors, which played so large a rôle after 1914, had much the same character and influenced business among all the belligerents in much the same way, so long as hostilities lasted. Since 1918, economic fortunes have diverged widely. Presumably the business forces tending toward convergence are gradually resuming their wonted sway." <sup>25</sup>

The "Conspectus of Business Fluctuations in Various Countries" <sup>26</sup> indicates that disorganization and depression began in Germany immediately after the Armistice, and lasted until the spring of 1921. Then there was something of a revival, which was checked in the summer of 1922, giving way to increased disorganization and depression during the remainder of that year and 1923. This fluctuation is quite out of accord with the international pattern which indi-

<sup>25</sup> Pp. 90-1.

<sup>26</sup> Pp. 75-87.

cates "recession in 1918; very brief and mild depression early in 1919; quick revival in 1919; prosperity in 1919-20; recession in 1920; severe depression in 1921-22; revival in 1922-23." " It is obvious that the events during the years immediately after the end of the War—particularly the internal political disorder and the currency inflation—must have tended to isolate Germany's economy from that of the rest of the world. However, as was remarked above (Ch. I, Sec. 1) there is reason to believe that Germany after the currency stabilization would be more subject to foreign economic influences than before the War.

In order to compare the German post-stabilization cycles with those of other countries, recourse has been taken to a method generally similar to that of Dr. Mitchell.

First, a conspectus (Table 17) that allows rapid comparison of phases of cyclical fluctuations in Germany and fourteen other countries during every half year from the beginning of 1924 to the end of 1932 has been prepared. The fourteen nations selected for comparison with Germany are the United States, Great Britain, France, Italy, Sweden, Canada, Japan, Belgium, Czechoslovakia, The Netherlands, Austria, Denmark, Poland and Switzerland. Most of these nations are highly developed in industry, trade and finance, and occupy places of importance in the foreign trade of Germany or of some other nation on

" *Business Cycles*, p. 442.

the list. They are nations, then, whose cycles should be expected to follow an 'international pattern' most closely.

This table is based largely upon statistical data in the quarterly publication of the Institut für Konjunkturforschung, *Vierteljahrshefte zur Konjunkturforschung* (Berlin, 1926-33); and upon the various issues of the *Statistisches Jahrbuch des deutschen Reichs* (Berlin, 1924-32). Some reference has also been had to Thorp's *Business Annals*, to the National Industrial Conference Board's series, *A Picture of World Economic Conditions* (1928, 1929, 1930); to the economic quarterlies of the *Frankfurter Zeitung* (*Die Wirtschaftskurve . . . 1924-32*); the League of Nations study, *The Course and Phases of the World Economic Depression* (Geneva, 1931). Time series reflecting significant aspects of each nation's economy—industrial production, employment, commodity prices, domestic trade, money and credit conditions, security markets and foreign trade—have been translated into qualitative terms pertaining to each half-year period. It must be emphasized that only the general tendency, the major direction of change apparent in these aspects is indicated. Table 18a is intended to present the degree of likeness or difference between the contemporary economic fortunes of Germany and each of the fourteen other countries. It is apparent from Table 17 that the conditions cannot always be called quite similar or decidedly unlike. "Thus it is necessary to recognize

at least three types of relations between the synchronous phases of business cycles in different countries—agreement, partial agreement and opposition.” The arbitrary definitions followed by Dr. Mitchell have been adopted for the purposes of Tables 18a and 18b.<sup>28</sup>

Table 18b indicates the degree of likeness between cyclical fluctuations of Germany and each of nine other countries during the period 1900–14.<sup>29</sup>

Tables 19a and 19b are summaries of Tables 18a and 18b. They give the number of instances of agreement, partial agreement and opposition during each half year from the beginning of 1924 to the end of 1932, and during each year from 1900 to 1914.

Table 20a indicates the number and percentage of periods of agreement and difference of phase in the cyclical fluctuations of Germany and each of the fourteen other countries (enumerated in Table 17)

<sup>28</sup>“Agreement includes

- (1) Years in which two countries pass through the same phase or phases of a cycle.
- (2) Years in which two countries pass through at least two corresponding phases, though one may enter a third phase.

Partial agreement includes

Years in which two countries pass through phases of the cycle which succeed one another.

Opposition of phases includes

Years in which opposite phases of cycles occur, whatever intermediate phases are noted.

The relative severity of recessions in different countries is not taken into account.”

*Business Annals*, p. 90.

<sup>29</sup>This table is based upon the *Conspectus of Business Conditions in Various Countries*, *ibid.*, Table 10, pp. 75–87.

during the period 1924-32; Table 20b presents the same data for Germany and nine other countries (enumerated in Table 18b) during the periods 1900-14 and 1924-32.

The tables afford no reason to believe that recent events contradict the conclusion of Dr. Mitchell in his study of the international relationships among business cycles from 1867 to 1925 that there is "a general trend toward uniformity of business fortunes."<sup>20</sup> There is indication of rather close international similarity of phase in the cyclical fluctuations since 1926, and the German cycle of 1926-32 has shown much the same sort of agreement with the cycles of other countries as was true in the decade before the War. "The intimacy of relations is probably understated" by the tables, for they "take no account of the shifting relations of lead and lag in the influence exercised by business conditions in one country upon business conditions in the other country with which it is compared."<sup>21</sup>

The records of the first two and a half years after the German stabilization—that is, 1924-26—indicate no very marked correspondence between the fluctuations in Germany and those in the larger capitalistic countries. The War broke the international economic relationships of Germany, and the post-War period of political and financial difficulties interfered with their restoration. This was also true of

<sup>20</sup> *Ibid.*, p. 93.

<sup>21</sup> *Ibid.*, p. 90.



other European nations. National economic fortunes diverged widely for nearly a decade after the Armistice. Inflation, political instability, difficulties of stabilization—these and other factors, affecting many nations at different times, and in varying degree, tended to interfere with a synchronizing of cyclical fluctuations.

After the beginning of 1927, however, a growing international similarity is apparent. Indeed, it is possible again to speak of an 'international pattern': prosperity in 1927-29; recession in 1929-30; depression in 1930-32. The more immediate difficulties of stabilization had been overcome, not only in Germany, but also in Great Britain, France and Italy. The British coal strike made for a revival of business activity in several nations, notably Germany. Undoubtedly, an important factor making for convergence was the increasing international penetration of loan fund capital—a development that was of particular significance for German economy. It is possible that the slow recession in Germany, beginning in the second half of 1928, and anticipating by almost a year the decline in the economic activity of other nations, was a reflection of its extreme sensitivity to changes in international credit conditions. Finally, 1930, 1931 and 1932 are characterized by almost world-wide depression. The economic condition of Germany—considered in its cyclical aspects—in these years was strikingly similar to that of most of the other industrial nations.

As would be expected from the intimacy of their business relations, the cycles of Czechoslovakia, The Netherlands, Poland and Switzerland are more highly correlated with the German cycles than are the cycles of other countries. The least agreement would seem to have existed between the cycles of France, Italy and Denmark on the one hand, and those of Germany, on the other. The continuance of currency inflation in France and Italy for some years after the German stabilization and the currency deflation in 1926 in Denmark may account in part for this divergence.

As we suggested in Ch. I, Sec. 1, it is probable that the post-War changes in German economy have made Germany more sensitive to foreign economic forces than it was before the War. If this be true, it is to be expected that there will be an increased tendency towards correlation between the cyclical fluctuations in Germany and in other industrial nations.

TABLE 17

CONTEMPORARY PHASES OF BUSINESS CYCLES IN FIFTEEN COUNTRIES, 1924-1932, BY HALF-YEARS

	1924		1925	
	I	II	I	II
GERMANY	Depression; revival; temporary check	Revival	Revival; prosperity	Recession
UNITED STATES	Mild depression	Revival	Prosperity	Prosperity
GREAT BRITAIN	Depression	Depression	Depression	Depression
FRANCE	Prosperity	Prosperity	Prosperity	Prosperity
ITALY	Moderate prosperity	Moderate prosperity	Prosperity	Prosperity
SWEDEN	Moderate prosperity	Moderate prosperity	Moderate prosperity	Moderate prosperity
CANADA	Recession	Mild depression	Revival	Prosperity
JAPAN	Depression	Depression	Depression	Revival
BELGIUM	Revival	Moderate prosperity	Recession	Revival
CZECHOSLOVAKIA	Revival	Revival	Revival; prosperity	Prosperity; recession
NETHERLANDS	Revival	Revival	Moderate prosperity	Moderate prosperity; recession
AUSTRIA	Revival	Recession	Recession	Depression
DENMARK	Revival	Prosperity; recession	Recession	Depression
POLAND	Recession	Recession; revival	Prosperity; recession	Recession
SWITZERLAND	Revival	Revival	Prosperity	Recession

TABLE 17 (cont.)

CONTEMPORARY PHASES OF BUSINESS CYCLES IN FIFTEEN COUNTRIES, 1924-1932, BY HALF-YEARS

	1926		1927	
	I	II	I	II
GERMANY	Depression; revival	Revival	Revival	Prosperity
UNITED STATES	Prosperity	Moderate prosperity	Moderate prosperity	Slight recession
GREAT BRITAIN	Depression	Deep depression	Depression	Revival
FRANCE	Prosperity	Recession	Mild depression	Revival
ITALY	Recession	Recession	Depression	Depression
SWEDEN	Prosperity	Prosperity	Prosperity	Prosperity
CANADA	Prosperity	Prosperity	Prosperity	Slight recession
JAPAN	Uneven prosperity	Uneven prosperity	Uneven prosperity	Recession
BELGIUM	Moderate prosperity	Moderate prosperity	Prosperity	Prosperity
CZECHOSLOVAKIA	Depression	Revival	Revival	Moderate prosperity
NETHERLANDS	Recession; depression	Revival	Uneven prosperity	Prosperity
AUSTRIA	Depression	Depression; revival	Revival	Prosperity
DENMARK	Depression	Depression	Depression	Depression; revival
POLAND	Depression	Revival	Prosperity	Prosperity
SWITZERLAND	Depression	Revival	Revival	Prosperity

TABLE 17 (cont.)

CONTEMPORARY PHASES OF BUSINESS CYCLES IN FIFTEEN COUNTRIES, 1924-1932, BY HALF-YEARS

	1928		1929	
	I	II	I	II
GERMANY	Prosperity; recession	Recession	Recession	Depression
UNITED STATES	Revival	Prosperity	Prosperity	Recession
GREAT BRITAIN	Recession	Depression	Recovery	Recession
FRANCE	Prosperity	Prosperity	Prosperity	Prosperity
ITALY	Revival	Revival	Uneven prosperity	Recession
SWEDEN	Moderate prosperity	Moderate prosperity	Moderate prosperity	Moderate prosperity
CANADA	Revival; prosperity	Prosperity	Prosperity	Recession
JAPAN	Revival	Moderate prosperity	Moderate prosperity	Recession
BELGIUM	Moderate prosperity	Moderate prosperity	Moderate prosperity	Recession
CZECHOSLOVAKIA	Moderate prosperity	Moderate prosperity	Moderate prosperity	Recession
NETHERLANDS	Moderate prosperity	Moderate prosperity	Moderate prosperity	Mild recession
AUSTRIA	Prosperity	Prosperity	Prosperity	Prosperity; recession
DENMARK	Revival; prosperity	Prosperity	Prosperity	Prosperity
POLAND	Prosperity	Prosperity	Prosperity; recession	Recession
SWITZERLAND	Prosperity	Prosperity	Prosperity	Prosperity

TABLE 17 (cont.)

CONTEMPORARY PHASES OF BUSINESS CYCLES IN FIFTEEN COUNTRIES, 1924-1932, BY HALF-YEARS

	1930		1931	
	I	II	I	II
GERMANY	Depression	Depression	Depression	Depression
UNITED STATES	Depression	Depression	Depression	Depression
GREAT BRITAIN	Depression	Depression	Depression	Depression
FRANCE	Uneven prosperity	Recession	Recession	Depression
ITALY	Depression	Depression	Depression	Depression
SWEDEN	Uneven prosperity	Recession	Depression	Depression
CANADA	Depression	Depression	Depression	Depression
JAPAN	Depression	Depression	Depression	Depression
BELGIUM	Depression	Depression	Depression	Depression
CZECHOSLOVAKIA	Depression	Depression	Depression	Depression
NETHERLANDS	Recession; depression	Depression	Depression	Depression
AUSTRIA	Depression	Depression	Depression	Depression
DENMARK	Prosperity	Recession	Depression	Depression
POLAND	Depression	Depression	Depression	Depression
SWITZERLAND	Recession	Recession	Depression	Depression

TABLE 17 (cont.)  
 CONTEMPORARY PHASES OF BUSINESS CYCLES IN FIFTEEN  
 COUNTRIES, 1924-1932, BY HALF-YEARS

	1 9 3 2	
	I	II
GERMANY	Depression	Hesitant revival
UNITED STATES	Depression	Depression
GREAT BRITAIN	Depression	Hesitant revival
FRANCE	Depression	Hesitant revival
ITALY	Depression	Hesitant revival
SWEDEN	Depression	Depression
CANADA	Depression	Depression
JAPAN	Hesitant revival	Revival
BELGIUM	Depression	Hesitant revival
CZECHOSLOVAKIA	Depression	Depression
NETHERLANDS	Depression	Depression
AUSTRIA	Depression	Depression
DENMARK	Depression	Depression
POLAND	Depression	Depression
SWITZERLAND	Depression	Depression

TABLE 18a

EXTENT OF AGREEMENT AND DIFFERENCE OF PHASE IN THE BUSINESS CYCLES OF GERMANY  
AND EACH OF FOURTEEN OTHER COUNTRIES

1924-1932 by half-years

(AGREEMENT IN PHASE WITH GERMANY = +  
PARTIAL AGREEMENT IN PHASE WITH GERMANY = ±  
OPPOSITION IN PHASE TO GERMANY = -)

	1924		1925		1926		1927		1928		1929		1930		1931		1932	
	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II
UNITED STATES	±	+	±	±	-	±	±	±	-	±	±	±	+	+	+	+	+	±
GREAT BRITAIN	±	±	-	±	+	±	±	±	+	±	-	±	+	+	+	+	+	+
FRANCE	-	±	±	±	-	-	±	±	±	±	±	-	±	±	±	±	±	±
ITALY	-	±	±	±	±	-	±	-	-	-	±	±	+	+	+	+	+	+
SWEDEN	-	±	±	±	-	±	±	+	±	±	±	-	-	±	+	+	+	±
CANADA	-	±	+	±	-	±	±	±	±	±	±	±	+	+	+	+	+	±
JAPAN	±	±	-	-	-	±	±	±	-	±	±	±	+	+	+	+	±	+
BELGIUM	±	±	-	-	-	±	+	±	±	±	±	±	+	+	+	+	+	+
CZECHOSLOVAKIA	±	+	+	±	+	+	+	+	±	±	±	±	+	+	+	+	+	±
NETHERLANDS	±	+	+	±	±	+	±	±	±	±	±	±	±	+	+	+	+	±
AUSTRIA	±	-	-	±	±	±	±	+	±	±	±	±	±	+	+	+	+	±
DENMARK	±	-	±	±	±	±	±	-	-	±	±	-	±	+	+	+	+	±
POLAND	-	±	±	+	±	+	±	+	±	±	±	±	+	+	+	+	+	±
SWITZERLAND	±	+	±	+	+	+	+	+	±	±	±	-	±	±	+	+	+	±



TABLE 18b

EXTENT OF AGREEMENT AND DIFFERENCE OF PHASE IN  
THE BUSINESS CYCLES OF GERMANY AND EACH OF NINE  
OTHER COUNTRIES

1900-1914 by years

(AGREEMENT IN PHASE WITH GERMANY = +

PARTIAL AGREEMENT IN PHASE WITH GERMANY = ±

OPPOSITION IN PHASE TO GERMANY = -)

	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
UNITED STATES	+	-	-	-	-	±	+	+	+	-	-	-	±	+	±
GREAT BRITAIN	+	+	+	±	-	+	+	+	±	±	±	+	+	+	±
FRANCE	+	+	+	+	±	±	+	-	±	±	±	+	+	+	±
ITALY	+	-	-	±	±	±	+	+	+	±	-	±	±	+	±
SWEDEN	-	±	+	+	±	±	+	+	+	±	±	+	+	+	-
CANADA	+	-	-	±	±	±	+	+	±	±	±	+	+	+	±
JAPAN	-	+	±	+	±	-	±	+	+	+	+	+	+	±	-
NETHERLANDS	±	±	+	±	-	±	+	-	±	-	±	+	+	±	-
AUSTRIA	+	+	+	±	-	±	+	-	±	±	-	±	-	-	±

TABLE 19a

NUMBER OF INSTANCES OF AGREEMENT, PARTIAL AGREEMENT, AND OPPOSITION OF PHASE IN THE CYCLICAL FLUCTUATIONS OF GERMANY AND EACH OF FOURTEEN OTHER COUNTRIES<sup>1</sup>

*1924-1932 by half-years*

PERIOD	AGREEMENT	PARTIAL AGREEMENT	OPPOSITION
1924, I	0	9	5
II	4	8	2
1925, I	3	6	5
II	2	10	2
1926, I	3	5	6
II	4	8	2
1927, I	3	11	0
II	7	5	2
1928, I	1	9	4
II	0	13	1
1929, I	0	13	1
II	0	10	4
1930, I	9	2	3
II	10	4	0
1931, I	13	1	0
II	14	0	0
1932, I	13	1	0
II	5	9	0

<sup>1</sup> See Table 18a for names of the fourteen countries.

TABLE 19b

NUMBER OF INSTANCES OF AGREEMENT, PARTIAL AGREEMENT, AND OPPOSITION OF PHASE IN THE CYCLICAL FLUCTUATIONS OF GERMANY AND EACH OF NINE OTHER COUNTRIES<sup>1</sup>

*1900-1914 by years*

YEAR	AGREEMENT	PARTIAL AGREEMENT	OPPOSITION
1900	6	1	2
1901	4	2	3
1902	5	1	3
1903	3	5	1
1904	0	5	4
1905	1	7	1
1906	8	1	0
1907	6	0	3
1908	5	4	0
1909	1	6	2
1910	1	5	3
1911	6	2	1
1912	6	2	1
1913	6	2	1
1914	0	6	3

<sup>1</sup> See Table 18a for names of the fourteen countries.

**TABLE 202**  
**NUMBER AND PERCENTAGE OF PERIODS OF AGREEMENT**  
**AND DIFFERENCE OF PHASE IN THE BUSINESS CYCLES**  
**OF GERMANY AND EACH OF FOURTEEN OTHER**  
**COUNTRIES<sup>1</sup>**

		<i>1924-1932</i>						
	PERIOD COVERED	NO. OF PERIODS	NUMBER OF PERIODS OF			PERCENTAGE OF PERIODS OF		
			+	±	—	+	±	—
GERMANY AND								
UNITED STATES	1924-1932	18	6	10	2	33	56	11
GREAT BRITAIN		18	8	8	2	44	44	11
FRANCE		18	8	10	5	16	56	28
ITALY		18	6	7	5	33	39	28
SWEDEN		18	4	10	4	22	56	22
CANADA		18	6	10	2	33	56	11
JAPAN		18	5	9	4	28	50	22
BELGIUM		18	7	8	3	39	44	17
CZECHOSLOVAKIA		18	11	7	0	61	39	0
NETHERLANDS		18	8	10	0	44	56	0
AUSTRIA		18	7	9	2	39	50	11
DENMARK		18	8	9	6	17	50	33
POLAND		18	8	9	1	44	50	6
SWITZERLAND		18	9	8	1	50	44	6
FOURTEEN OTHER COUNTRIES	1924-1932	252	91	124	37	36	49	15
FOURTEEN OTHER COUNTRIES	1924-1926 (I)	70	12	38	20	17	54	29
FOURTEEN OTHER COUNTRIES	1926-1932 (II)	182	79	86	17	44	47	9

<sup>1</sup> See Table 18a for explanation of symbols.

TABLE 20b  
 NUMBER AND PERCENTAGE OF PERIODS OF AGREEMENT  
 AND DIFFERENCE OF PHASE IN THE BUSINESS CYCLES  
 OF GERMANY AND NINE OTHER COUNTRIES<sup>1</sup>

*1900-1914; 1924-1932*

PERIOD COVERED	NO. OF PERIODS	NUMBER OF PERIODS OF			PERCENTAGE OF PERIODS OF		
		+	±	—	+	±	—
1900-1908	63	27	22	14	43	35	22
1907-1914	72	31	27	14	43	38	19
1924-1926 (I)	45	5	26	14	11	58	31
1926-1932 (II)	117	47	58	12	40	50	10
1924-1932	162	52	84	26	32	52	16

<sup>1</sup> See Table 18b for names of the nine countries and for explanation of symbols.

## CHAPTER FOUR

### CONCLUSIONS

FOR many years the economic activities of capitalistic countries have been subject to fluctuations known as 'business cycles'. Again and again a period of commercial and industrial activity ends in a relapse; then follows a period of dullness; afterwards a revival sets in, and finally commerce and industry are once more active. This recurring alternation of 'good' and 'bad' times is familiarly called the 'business cycle'.

Every business cycle has unique characteristics, yet a pattern of recurrent rise and fall in most economic activities is common to all. The similarities among business cycles "may be ascribed to the interdependence among economic activities in a large society where almost all people derive a major share of their satisfactions from making and spending money incomes. Under such conditions greater activity in any line leads to freer buying, larger employment, more borrowing, heavier investment. These changes enlarge the market for materials, labor, credit and construction work, and so tend to

stimulate activity in other lines. But a generally accelerated rate of activity, when carried beyond an uncertain point, creates difficulties of various sorts. Output in some lines increases more rapidly than demand for the products at profitable prices; incomes disbursed may not keep pace with the volume of consumers' goods sent to market; rising costs may encroach upon margins of profit; as loans increase a stringency may develop in the money markets, raising interest rates, checking new enterprises and forcing a downward revision of capitalized incomes. In short, some lack of balance always develops among the various activities which are expanding at different rates. Then, just as the upward movement progressively stimulated all activities, the downward movement checks activity in one field after another, spreading among all economic processes. A recession occurs. Once started on the downward grade, the processes of contraction exhibit a cumulative tendency similar to that of the preceding process of expansion. But soon or late, this process of readjustment works out a practicable new equilibrium among related lines of activity, produces conditions favorable to expansion in certain parts of the system, and thus starts a new revival of activity." <sup>1</sup>

This process of expansion and contraction is apparent in all business cycles. But divergencies among them are inevitable inasmuch as they occur in a society subject to a multiplicity of influences, some

<sup>1</sup> Wesley C. Mitchell, in an unpublished manuscript.

continuous and others non-recurrent. All types of economic change—seasonal variations, secular movements, long cycles, random perturbations, cyclical fluctuations—are interacting. Furthermore, the combination of influences making for a particular cycle is never precisely the same. The cycles of history, then, are complexes of fluctuations that are subject to the varying impact of a host of factors.

Thus, "the momentum of cyclical expansion may be heightened by some favorable random perturbation or the rapid secular expansion of a 'new' industry, such as the automobile industry. The opposite is equally true; a cyclical contraction may be accentuated by an unfavorable development, such as a poor crop. . . . Finally, the turning points in business cycles, when activity is hesitating on the brink of a downward turn or bumping along the bottom of a trough, seem often to be determined by some event of a non-business character. Analysis may show that it was the cyclical condition of business which lent the non-business event its peculiar importance; the same event, had it occurred at some other phase of the cycle, might have passed by without affecting the cyclical tides appreciably."<sup>2</sup>

These generalizations—only briefly sketched here—are familiar enough. It is believed that the present study offers specific historical illustration for them. In that sense, it is a chapter in the history of business fluctuations.

<sup>2</sup> *Ibid.*



1. The present analysis indicates that the two cycles in post-inflation German economy conformed to the pattern common to all business cycles, yet displayed peculiarities of intensity and duration. The variety of business annals considered offers evidence that the first cycle was relatively short, and the second was longer and less precipitous. Statistical analysis of a group of eighty-four selected series, representing many aspects of German economic life, supports more precisely the conclusions derived from the annals. A preponderance of the series examined show two cycles whose initial and terminal troughs occur in the winter of 1923-24, in the spring of 1926, and in the late summer and autumn of 1932. Although timing, duration and amplitude of the cyclical fluctuations apparent in the series vary considerably, yet there is sufficient unity of cyclical pattern to justify acceptance of the concept of 'general business cycles'. The cyclical pattern outlined below is especially evident in the fluctuations of series of industrial production, construction, employment, commodity imports, merchandising, the volume of trade, transportation, the so-called 'free' commodity prices, security prices and business difficulties. Rather more erratic in their cyclical behavior are series of agricultural production, currency, credit and capital, 'regulated' commodity prices, and commodity exports.

The first of the post-inflation cycles, 1924-26, was short in comparison with the average pre-War

cyclical experience of Germany. Apparently there is only one other German cycle on record that is shorter, namely, that of 1879-81. High points of the series giving evidence of the cycle, 1924-26, are grouped with relatively small dispersion about March 1925. The expansion phase of this cycle, which was of exceptional amplitude and intensity, was terminated abruptly; the subsequent contraction was short and of less amplitude than the expansion. Numerous series do not actually fall during the period of contraction, but most series at least show retardation in their rates of rise.

The second post-inflation cycle began during the spring of 1926 and apparently ended in the late summer and autumn of 1932. It thus is one of the longest of German cycles on record; there is evidence of but two pre-War cycles (1886-95 and 1895-1902) of longer duration. This recent cyclical movement has made itself felt in the totality of German economy, inasmuch as almost all series examined give evidence of absolute rise and fall during its course. The high points of series showing the cycle appear at widely separated dates. Therefore its crest is difficult to establish definitely. However, a significant variety of economic activities reached their highest levels in the spring of 1928. Compared with pre-War experience, the amplitude of rise and fall of most series in this cycle has also been unusually large. Especially pronounced is the severity and length of its contraction phase.

Two pronounced 'irregularities'—that is, non-seasonal movements of rise and decline superimposed upon a cyclical swing—are apparent in many of the series analyzed. First, there is evidence of an interruption in the general expansion that had begun early in 1924; a sudden, sharp decline and rise appears in most series during the late spring and early summer of that year. As noted in the presentation of the testimony of business annals, a severe credit curtailment by the Reichsbank authorities, intended as a safeguard for the newly stabilized currency, together with the effects of a coal miners' strike in the Ruhr, was apparently a decisive factor making for this irregularity. Furthermore, a marked fall and rise, from the winter of 1928-29 to the summer of 1929, is manifest in a considerable number of series, particularly in those of industrial production, employment, domestic trade and commodity imports. This movement occurred at a time of general cyclical contraction. It appears to reflect a decline in production occasioned by a lockout in the Ruhr-Westphalian iron industry and by an unusually severe winter, and of a compensatory rise during the spring and summer.

Thus, the two post-inflation cycles appear to have been most exceptional in their amplitudes of rise and fall, in the shortness of the first cycle and in the long phase of contraction in the second. Explanation for these unique characteristics affords illustration of the influence exerted on an economy by a

variety of factors, some of which may not be strictly economic in origin.

2. The War, the Treaty of Versailles and the currency inflation imposed important structural changes upon German economy. The waging of the War and the demands of the Treaty, particularly for reparations, led to a heavy reduction in the national income. The country's area was reduced relatively more than its population. This territorial loss increased the dependence of Germany upon imports of foodstuffs and raw materials and upon foreign markets for the exports of its industrial products. It emphasized the industrial, as contrasted to the agricultural, aspect of German economic life. Further important changes occurred during the inflation. The amount of the national income continued to shrink, and its distribution was violently altered. In technique, German industry remained behind the times, and a host of new, inefficient and unstable business enterprises increased the burdens of German economy.

These structural changes contributed to the peculiar pattern that business fluctuations traced in the years after stabilization. They narrowed the self-sufficiency of German economy and made it extremely dependent upon foreign sources of capital. They were reflected in chronic shortage of credit and in recurrent difficulties related to business organization and industrial technique, to commercial failures and to unemployment.

The two business cycles in the post-inflation years, 1924-32, were a complex of fluctuations in many economic activities. Examination of the behavior of important elements in the economy reveals distinctive features that were contributory to the unique pattern of these cycles.

After a decade of war and currency inflation, Germany required large amounts of capital for the reconstruction of its economic and social apparatus, and for export in the form of reparation payments. Domestic savings in the period 1924-30 were large, but not sufficient to satisfy all the urgent needs. Germany's demands as a borrower on the international money markets led to a rapid influx of foreign capital. Almost continuous tension in the money and credit markets made German economy highly sensitive to changes in the supply of loan funds. The large proportion of foreign capital in the economy increased its vulnerability to international economic disturbances, especially because much of this capital was subject to withdrawal at short notice. Doubtless short-term advances were immobilized to a considerable extent in long-term investments. Thus, an international credit crisis, leading to sudden recall of foreign funds, must have been a threat to financial stability.

There is reason to believe that the rapid cyclical recovery in 1924-25, and again in 1926-28, was closely associated with a large volume of foreign borrowings, and that the decline from 1928 to 1930

was related to a diminution in the inflow of funds. Rapid withdrawal of foreign credits in 1931 seriously shook the German economy.

Despite the importance of capital and credit in shaping the post-inflation cycles, there is relatively little consistency in the cyclical movement of many of the money and banking series. However, there is indication of an underlying tendency of rise to a peak in 1929 or 1930, and decline thereafter.

The years after currency stabilization were characterized by extensive technical and administrative reorganization of the industrial productive system. Apparently this industrial 'rationalization' was a factor in the sudden recession of 1925, in which many inefficient business organizations, legacies of the inflation, were forced into liquidation. Also, it was reflected in the upswing from 1926 to 1928, when the volume of production and sales at home and abroad expanded rapidly. But purchasing power in domestic and foreign markets was insufficient to absorb the increased productive capacity of German industry. Excess capacity contributed to the sweeping decline in commodity prices that characterized the recession after 1928.

The production of industrial raw materials and production goods reflects the stimulus given by the English coal strike in 1926, the sudden decline in the activity of the iron and steel industry during the lockout late in 1928, and the compensatory increase in production during the first half of 1929. Ap-

parently the stimulus to production in early 1926 contributed to the rapidity of recovery in many economic activities at that time, whereas the short revival in output of production goods in 1929 tended to retard the cyclical contraction for a time.

Analysis of series of agricultural production in post-inflation German economy supports the finding of studies covering other economies over longer periods; namely, the relationship between cycles in agricultural activities and cycles in industry and trade is not consistent. The group of agricultural series here considered shows relatively little correspondence with the general cyclical pattern in the number of cycles, their timing, amplitude and duration. However, there is reason to believe that the fortunes of agriculture in Germany have influenced the course of cyclical fluctuations in non-agricultural activities. Certainly, the chronic difficulties of German agriculture, manifested particularly in the relatively high prices paid by farmers for capital supplies and non-agricultural products and the relatively low prices received for their output, leading to low purchasing power on the part of the farming population, have been a depressive factor throughout the years since stabilization. Furthermore, agricultural relief, particularly in the form of tariffs, has been a heavy burden on industry and commerce.

The system of prices, particularly as reflected in the 'free' commodity prices and security prices, was subject to much the same cyclical pattern as were

other aspects of German economy. This pattern was also evident, although less definitely, in prices subject to regulation by public and private organizations—namely, in the prices of certain industrial commodities and in wages. It is possible that partial control of the price system may have accelerated the cyclical movements of prices that were not regulated, and even of the physical volume of production and employment. However, this is difficult to prove.

The number of commercial failures and liquidations of enterprises rose to high levels during 1925 and 1926, and there were many failures again in 1931. This must be viewed, in part, at least, as an aspect of structural reorganization of business from the chaotic conditions of the inflation—reorganization that was especially evident during recession and depression.

The labor market was especially sensitive to cyclical fluctuations, but such fluctuations were superimposed upon a deep stratum of unemployment that was present throughout the years 1924–32. The basically high level of unemployment appears to have been largely the result of structural changes, particularly in population and in industrial technique and organization. However, it is probable that these structural factors will become less important in the next decade.

Germany's foreign trade in the period 1924–29 was characterized by a rapid increase in volume, of both imports and exports, and by a fairly per-



sistent import surplus, which emphasized the dependence of German economy upon foreign capital supplies. In 1930-32, with the advent of world-wide depression, imports and exports declined. However, the German market for foreign goods contracted more sharply than did the markets for German exports. Consequently, in these years Germany's export balance was large. Variations in the volume of imports reflected closely the general cyclical fluctuations in German economy. The volume of exports, however, reflected general cyclical movement only towards the end of the period here considered. It seems probable that the maintenance of a relatively large export market for German goods was a factor preventing the cyclical contraction after 1928 from becoming even more severe.

A comparison of cyclical fluctuations in the economies of Germany and fourteen other countries, most of which are industrially or commercially important, offers no reason to contradict the belief that there is a "general trend toward uniformity of business fortunes" in various parts of the world. There has been rather close international similarity of phase in cyclical fluctuations since 1926, and the German cycle of 1926-32 has shown much the same sort of agreement with the cycles of other countries as was true in the decade before the War. The slow recession in Germany, beginning in the second half of 1928, and anticipating by almost a year the decline in economic activity of other nations, may have

been a reflection of its extreme sensitivity to changes in international credit conditions. The cycles of Czechoslovakia, The Netherlands, Poland and Switzerland are more highly correlated with German cycles than are those of other countries. The least agreement seems to have existed between the cycles of Germany and those of France, Italy and Denmark.

There is reason to believe that the post-War changes in German economy have made Germany more sensitive to foreign economic forces than it was before the War. The English coal strike in 1926 was an important stimulus to German business recovery in that year. Furthermore, the penetration of German economy by foreign capital was a structural modification with serious cyclical implications. Changes in the rate of inflow of funds were of significance in the cyclical movement, especially in the revival of 1924, and in the recession of 1928-32. If it is true that German economy has become more susceptible to international influences, it is to be expected that there will be increased tendency towards correlation between the cyclical fluctuations in Germany and in other industrial nations.

It appears that the course of cyclical fluctuations in Germany was at times dependent upon particular historical situations not originating immediately in German economy. Thus, the international conferences on reparation payments in 1924, leading to the organization of an agency that greatly facilitated such payments, gave impetus to the flow of foreign

capital' to Germany. This inflow, as noted above, was a significant factor in the cyclical fluctuations from 1924 to 1930. Again, the long-continued and difficult reparation conferences in 1929 led to a feeling of uncertainty among business men, in Germany and in other countries, that may have contributed to recession. Also, the unprecedentedly cold winter of 1928-29 was a 'disturbing element' in that its reflection in business activity tended to exaggerate the recession early in 1929 and to veil it during the middle of that year. Finally, the growing strength of the extreme political parties during 1930 and 1931 probably accelerated the withdrawal of foreign credits that led to the crisis of the summer of 1931. Thus 'external' factors of non-economic institutional, of emotional and of physical geneses manifested themselves in the cyclical pattern of German economy. Nevertheless, it must be emphasized that factors more intimately associated in origin with the economy appear to have been predominant in shaping that pattern.

3. More comprehensively, it may be said that German economy in the years 1924-33 was subject to influences arising out of structural changes especially marked in the working population, in the technique of production, in business organization and in the financing process. Enmeshed with such fundamental modifications was a rhythm of cyclical fluctuations.

These changes in the structure of German econ-

omy, legacies of the period of war and currency inflation, were in large degree responsible for the unique character of the two post-inflation cycles. The months immediately subsequent to the stabilization of the currency were characterized by deep depression. Revival set in, after some hesitation, and carried the economy to relatively high levels. Active domestic demands, which had previously been delayed because of the confusion prevailing during the later stages of the inflation, together with the support of a heavy capital inflow from abroad, made for the unusual intensity of the upswing. The subsequent recession was short and sharp. It was probably in large measure an expression of the sweeping reorganization of German business—essential in order to eliminate inefficient firms that had been nurtured by inflation—and the continuing scarcity of capital necessary to sustain expansion at home and to make reparation payments. Recovery, however, was not long delayed. Further capital imports, improved business organization and methods of industrial production, together with the stimulus provided by expanded domestic income and growing foreign markets, carried the economy upward. But within two years, cyclical decline was again imminent. It seems probable that the high cost of urgently needed capital and the lack of sustained and widespread domestic purchasing power, reflecting the reduced incomes of those who had suffered economically during the inflation, the difficulties of agricultural

producers, and chronically large unemployment, made for the beginning of the decline. The contraction was at first gradual. Capital, though in insufficient amounts, continued to flow into Germany for several years, German foreign trade was sustained by continuance of favorable business conditions abroad, and industrial activity that was compensatory for the lockout and the unusual weather of the winter of 1928-29 tended to delay recession. However, after depression had become world-wide, the decline in Germany was more rapid. The inflow of capital was checked and confidence at home and abroad was shaken by political disturbances. The capacity to produce had expanded rapidly in the years after the inflation, but the rigidity of many commodity prices, the failure to extend rationalization into agriculture and the distributive system, and large unemployment weakened the purchasing power of the people and were important depressive factors in the long period of contraction.

## INDEX

(Series analyzed in Chapter III are *italicized*)

- Agent General for Reparation  
Payments, Reports, 25*n*, 38*n*,  
76*n*, 89*n*, 92*n*, 108*n*
- Agricultural prices, 98, 103*n*, 104,  
128, 200 ff., 270 (*see also*  
Prices)
- Agricultural production  
analysis of cyclical fluctuations  
in, 125 ff., 172 ff., 270  
post-War changes in, 6  
series of, enumerated, 128, 174
- Agricultural products, price index*  
of, 200 ff.
- Agriculture  
credit difficulties, 97  
government relief, 99  
in depression of 1930-32, 101  
post-inflation problems, 96 ff.  
purchasing power of farmers, 98  
rationalization, 99
- Amplitudes of pre-War and post-  
inflation cycles, 144-69
- ANGELL, J. W., 4*n*, 7*n*, 9*n*, 11*n*,  
12*n*, 25*n*, 31*n*, 73*n*, 75*n*, 77,  
81*n*, 83*n*, 95*n*, 99*n*, 100, 104*n*
- Applicants for positions*, 127 ff.,  
210 ff.
- Austria, business cycles, 1924-32,  
250 ff.
- Balance of international pay-  
ments, 1924-32, 110 ff.
- Beet sugar crop processed*, 128 ff.,  
173 ff.
- Belgium, business cycles, 1924-32,  
250 ff.
- BERGMANN, CARL, 23*n*
- Bills discounted, private, public*  
*and note-issuing banks*, 189  
ff.
- Bills drawn*, 223 ff.
- Bonds (*see Capital issues*)
- BONN, M. J., 91*n*
- BRADY, R. A., 94*n*
- BUELL, R. L., 23*n*
- Buildings, construction of, 76*n*
- Buildings, industrial and resi-  
dential, completed*, 173 ff.
- Business Annals, 241, 245, 246*n*
- Business cycles (*see also Cyclical*  
*behavior*).  
characteristics of, 261-3  
comparison of pre-War and  
post-inflation, 125 ff.; ampli-  
tudes, 144 ff.; conformity, 133  
ff.; duration, 129 ff.; turning  
points, 139 ff.,  
course of, 1924-33, summarized,  
60 ff., 274 ff.  
defined, 117, 121-2, 261

- diversities among, 262-3
- international relationships, 169-70, 240-60, 264 ff., 272-3
- peculiarities of, 1924-33, 8, 169-70, 264 ff.
- similarities among, 261
- technique of measuring, 119-24
- tendency towards increasing international similarity, 241 ff., 272.
- Business failures*, 127 ff., 219 ff.
- Business organization
  - analysis of cyclical fluctuations in, 118 ff., 125 ff., 271
  - changes in, during post-inflation period, 30, 34, 37 ff., 94, Ch. II, Part A, *passim*
  - influence of inflation on, 13
  - series of, enumerated, 127-8 218-9
- Canada, business cycles, 1924-32, 250 ff.
- Capital (*see also* Foreign investments)
  - accumulation, 77 ff.
  - investment of new, 86n
  - needs of German economy for, 7, 26, 36, 72, 75, 268
  - losses, 1924-22, 7, 72 ff.
  - losses, during inflation, 14, 73-5
- Capital issues, bonds, stocks*, 190 ff.
- Car loadings*, 224 ff.
- Cattle marketed for slaughter*, 174 ff.
- Coal
  - miners' wages*, 128 ff.
  - prices*, 128 ff., 201 ff.
  - production*, 126 ff., 173 ff.
  - stocks*, 175 ff.
- Coke production*, 126 ff., 173 ff.
- Conformity, pre-War and post-inflation cycles, 133-9
- Conformity indexes, 124
- Consumers' cooperatives, sales of*, 223 ff.
- Consumption goods
  - output*, 172 ff.
  - prices*, 201 ff.
- Consumption goods industries, unemployment in*, 210 ff.
- Cost of living, during inflation, 20
- Cost of living index*, 202 ff.
- Credit (*see* Capital, Foreign investments, Reichsbank, Short-term loans)
- Creditanstalt, failure of, 53
- Crisis, financial, 1932, 53-4, 92
- Currency circulation, 1919-23, 9-11 (*see also* *Money circulation*)
- Currency, credit and capital, cyclical fluctuations in, 189 ff.
- Currency inflation (*see* Inflation)
- Cyclical behavior
  - of significant groups in German economy, 125-240
  - technique of measuring, 119-24
- Cyclical fluctuations, defined, 117 (*see also* *Business cycles*)
- Cyclical pattern, 121
  - method of charting, 171n
- Czechoslovakia, business cycles, 1924-32, 249 ff., 273
- D'ABERNON, Viscount, 23n
- Dawes Committee, 24
- Dawes Plan, promulgation of, 31
- Denmark, business cycles, 1924-32, 249 ff., 273
- Department stores, sales of*, 223 ff.
- Deposits, banks of issue*, 189 ff.

- Deposits other than savings, private, public and note-issuing banks*, 190 ff. (see also Savings deposits)
- Depression**  
 1925-26, 35-40  
 1930-32, 53-7  
 post-stabilization, 26-7
- Dispersion of cyclical turning points, pre-War and post-inflation cycles**, 139-43
- Dissolution of business enterprises**, 219 ff.
- Domestic trade**  
 analysis of cyclical fluctuations in, 1924-32, 125 ff., 223 ff.  
 course of, 1924-33, Ch. II, Part A, *passim*  
 series of, enumerated, 127-8, 223-4
- Duration of pre-War and post-inflation cycles**, 129-32
- ELSTER, LUDWIG**, 18*n*, 20*n*
- Employment**  
 analysis of cyclical fluctuations in, 125 ff., 210 ff.  
 at end of inflation, 20, 27  
 course of, 1924-33, Ch. II, Part A, *passim*, 105-10  
 factors in, 1924-33, 107-10, 271  
*part-time, in trade unions*, 210 ff.  
 series of, enumerated, 127, 210-1
- English coal strike, 1926, influence on German economy**, 41, 248, 273
- Establishment of business enterprises**, 218 ff.
- Exports**  
 1924-33, 110 ff., 271-2
- analysis of cyclical fluctuations in, 125 ff., 231 ff.  
 series of, enumerated, 127, 232 ff.  
 value, of all, of foodstuffs, of manufactured goods, of raw materials, 232 ff.
- Foreign exchange, marks per dollar**, 1919-23, 9-11
- Foreign investments in Germany**, 31, 38, 42, 82 ff., 88 ff., 110, 268, 273  
 outflow of, 49, 53, 82 ff., 92, 268
- Foreign trade (see also Exports, Imports)**  
 course of, 1924-33, Ch. II, Part A, *passim*, 110-4  
 during inflation, 13, 20, 21
- France, business cycles, 1924-33**  
 249 ff., 273
- Frankfurter Zeitung**, 39*n*, 54*n*, 78, 88*n*, 245
- Freight car loadings**, 127 ff., 224 ff.
- French government, attitude on reparation payments**, 16 ff.
- German economy**  
 influence of inflation on, 8-24  
 influence of World War and Versailles Treaty on, 4-8  
 and Ruhr occupation, 18-21  
 structural changes in, summarized, 7, 267
- German External Loan of 1924**, 31
- German government**  
 extension of economic control of, 54  
 financial problems of, 18, 55  
 and Ruhr invasion, 16 ff.



- Germany (*see also* German economy, Business cycles)  
 balance of international payments, 110 ff.  
 changes in area, 5; agricultural production, 6; national income and savings, 14, 72 ff.; national wealth, 7, 14, 72 ff.; population, 5, 76n, 108-9  
 currency system reformed, 22  
 foreign investments of, 14, 75, 86, 110
- Gold cover of money circulation, 128 ff.
- GRAHAM, F. D., 5n, 73n
- Great Britain, business cycles, 1924-32, 250 ff.
- GREER, GUY, 18n
- HARMS, BERNHARD, 5n, 6n  
*Hay crop*, 128 ff., 174 ff.
- HELFFERICH, KARL, 73n, 81n  
*Hogs marketed for slaughter*, 174 ff.
- Imports \*  
 1924-33, 110 ff., 272  
 analysis of cyclical fluctuations in, 125, 231 ff.  
 series of, enumerated, 127, 231  
*value, of all, of foodstuffs, of manufactured goods, of raw materials*, 231 ff.
- Income, national (*see* National income)
- Indexes of conformity, 124
- Industrial finished goods, price index* of, 201 ff.
- Industrial production  
 analysis of cyclical fluctuations in, 125, 172 ff., 269
- course of, 1924-33, Ch. II, Part A, *passim*, 93-6  
 during inflation, 12, 13, 93  
*general index, production goods index, consumption goods index*, 172 ff.  
 rationalization of, 94-6, 269  
 series of, enumerated, 126, 128, 172-5
- Inflation  
 currency, Ch. I, *passim*  
 during Ruhr occupation, 18-20  
 end of, 22-3  
 repercussions on business organization, 13; German economy, 12 ff., 267; industrial production, 12, 13, 93; national wealth, 14, 15
- Institut für Konjunturforschung, 25n, 32, 79n, 80n, 87n, 90, 107n, 109, 171n
- Interallied Rhineland Commission, 17
- Interest rates (*see also* Capital, Reichsbank)  
 analysis of cyclical fluctuations in *monthly money rates*, 190 ff.; *private bank rates*, 127 ff., 190 ff.; *rates of return on 5 per cent mortgage bonds*, 190 ff.; *Reichsbank discount rates*, 127 ff., 190 ff.  
 compared with those in other countries, 1924-32, 82  
 course of, 1924-33, Ch. II, Part A, *passim*, 88 ff.  
 series of, enumerated, 127, 190
- 'International pattern' of business cycles, 242
- International relationships of German business cycles, 240-60, 272-3

- Iron**  
*prices*, 128 ff., 201 ff.  
*production*, 126 ff., 173 ff.  
 'Irregularities' in post-inflation  
 cycles, 188, 218, 231, 239, 266  
 Italy, business cycles, 1924-32,  
 249 ff., 273  
 Japan, business cycles, 1924-32,  
 249 ff.  
**KNICKERBOCKER, H. R.**, 78*n*  
 Lausanne agreement, 1932, 57  
 League of Nations, 96*n*, 245  
**LICHTENBERGER, HENRI**, 18*n*  
*Lignite production*, 173 ff.  
*Loans and advances, private, public  
 and note-issuing banks*,  
 189 ff.  
*Loans and discounts, banks of issue*,  
 128 ff., 189 ff.  
 Lockout in Rhenish-Westphalian  
 iron industry, 1928, 49  
*Losses of joint-stock companies*,  
 219 ff.  
**McGUIRE, C. E.**, 73*n*  
 McKenna Committee, 75*n*  
**Mark**  
 depreciation of, 8 ff.  
 repudiation of, 19  
 Milliard, defined, 14*n*  
**MITCHELL, W. C.**, 117*n*, 241  
 ff., 262*n*  
*Money circulation*, 128 ff., 189 ff.  
 Money market, 1924-33, 88 ff.  
**MOULTON, H. C.**, 73*n*  
**NAPHTALI, FRITZ**, 25*n*  
 National Bureau of Economic Re-  
 search  
 method of analyzing cyclical  
 behavior, 119  
 selection of turning points of  
 German business cycles, 130-2  
 National income  
 1913, 14*n*, 73*n*  
 during inflation, 14, 73  
 during post-inflation period, 80  
 proportion saved, 80*n*  
 National Industrial Conference  
 Board, 245  
 National wealth, 7, 14, 72 ff.  
 Netherlands, The, business cycles,  
 1924-32, 249 ff., 273  
*Orders, inflow of new*, 174 ff.  
*Organization of joint-stock com-  
 panies*, 128 ff.  
 Passive resistance during Ruhr  
 occupation, 17, 21  
 Pig-iron production (*see* Iron  
 production)  
 Pig-steel production (*see* Steel  
 production)  
 Poland, business cycles, 1924-32,  
 249 ff., 273  
*Postal check traffic*, 223 ff.  
*Potassium salts production*, 128  
 ff., 173 ff.  
*Potato crop*, 128 ff., 174 ff.  
 Prices, commodity and security  
 analysis of cyclical fluctuations  
 in, 125 ff., 200 ff., 270-1  
 course of, 1924-33, Ch. II, Part  
 A, *passim*, 101-5  
 decline after stabilization, 26  
 during inflation, 9-11, 20  
 regulated and 'free', 104-5, 202  
 ff.  
 series of, enumerated, 126, 128,  
 200-2

- wholesale, indexes of*, 126 ff., 200 ff.  
**PRION, W.**, 92*n*  
*Private bank discount rate*, 127 ff., 190 ff.  
 Production (*see* Agricultural production, Industrial production)  
 Production goods  
     *output*, 172 ff.  
     *prices*, 201 ff.  
*Production goods industries, unemployment in*, 210 ff.  
*Profits of joint-stock companies*, 219 ff.  
 Prosperity, 1926-28, 40 ff.  
*Railway freight and passenger earnings*, 127 ff., 224 ff.  
*Railway freight traffic*, 128 ff., 224 ff.  
 Random perturbations, defined, 117  
 Rationalization  
     agricultural, 99  
     industrial, 27, 39*n*, 40, 94 ff., 107, 269  
*Raw materials and semi-finished goods, price index of*, 201 ff.  
 Recession  
     1925, 35 ff.  
     1928-30, 47 ff.  
     defined, 122*n*  
 Recovery (*see also* Revival)  
     1924, 27 ff.  
     1926-28, 40 ff.  
     1932-33, 57 ff.  
 Reference-cycle pattern, 124  
 Reference dates, 122, 130, 131  
 Reichsbank  
     *clearings*, 127 ff., 223 ff.  
     control over foreign exchange, 93  
     credit policy, 28 ff., 43, 45, 54, 88 ff.  
     *discount of bills*, 127 ff., 189 ff.  
     *discount rates*, 88 ff., 127 ff., 190 ff.  
     and money markets, 45, 88 ff.  
     new constitution of, 22, 31  
     and stock exchange, 45, 89-90  
 Reichskreditgesellschaft, 25*n*, 79*n*, 80*n*  
 Reichsmark, established, 22, 31  
 Reichstag election, 1930, 53  
 Rentenbank, founding of, 22  
 Rentenmark, established, 22  
 Reparation Commission, 16  
 Reparation payments, 15, 21, 50, 52, 81*n*, 110, 112, 273  
 Revival, defined, 122*n*  
 ROEDLER, C. L., 25*n*  
 Ruhr invasion, 16-22  
     influence on German economy, 18-21  
*Rye crop*, 128 ff., 174 ff.  
 Savings, national, in post-inflation period, 72 ff., 77 ff., 80*n* (*see also* Capital)  
 Savings deposits  
     *monthly net increase*, 190 ff.  
     *surplus*, 128 ff.  
 SCHACHT, HJALMAR, 23*n*  
 Schmitz index of wholesale prices, 126*n*  
 SCHULTZE, ERNST, 18*n*, 21*n*  
 Seasonal variations, defined, 117  
 Secular movements, defined, 117  
 Securities, domestic issues of, 90 (*see also* Capital issues, Stock exchange prices)  
 SERING, MAX, 97*n*  
 Short-term loans

- relation to cyclical fluctuations, 85
- relative volume, 90
- Specific cycles, 118
- Stabilization of French currency, 41
- Stabilization of German currency, 22
- Statistisches Reichsamt, 6n, 14n, 18n, 25n, 27n, 102n, 107, 171n
- Steel production, 128 ff., 173 ff.
- Stinnes concern, collapse, 35
- Stock exchange prices, course of, 1924-33, Ch. II, Part A, *passim*, 89
- Stock prices, index of, 126 ff., 202 ff.
- Stocks (*see* Capital issues, Coal, Textiles)
- Sugar beets (*see* Beet sugar)
- Sweden, business cycles, 1924-32, 250 ff.
- Switzerland, business cycles, 1924-32, 249 ff., 273
- Textiles
  - production, 173 ff.
  - prices, 126 ff., 201 ff.
  - raw material stocks, 175 ff.
- THORP, W. L., 245
- Trade (*see* Domestic trade, Foreign trade)
- Transportation (*see* Car loadings, Railway)
- Turning points (*see* Dispersion)
- Unemployment
  - in consumption and production industries, 169 ff.
  - in trade unions, 127 ff., 210 ff.
  - 'invisible', 106n (*see also* Employment)
- United States, business cycles, 1924-32, 250 ff.
- Versailles, Treaty of, influence on German economy, 4 ff., 267
- Vessels under construction, 126 ff., 174 ff.
- Volume of bills drawn, 127 ff., 223 ff.
- WAGEMANN, ERNST, 88n, 102n, 105n, 175n
- Wages
  - coal miners', 128 ff.
  - course of, 1924-33, 104
  - during inflation, 20
  - regulated, skilled and unskilled, 211 ff.
- WELTER, ERICH, 25n, 78, 81n
- Wheat crop, 128 ff., 174 ff.
- Wholesale price index, 126 ff., 200 ff. (*see also* Prices)
- Wiggin Committee, 83
- Winter, 1928-29, influence of extreme temperatures on German economy, 49, 274
- World War, influence on German economy, 4 ff., 267
- WOYTINSKI, W., 5n, 6n
- Zinc production, 128 ff., 173 ff.

## *Publications of the National Bureau of Economic Research, 1921-1934*

---

- \*1 **INCOME IN THE UNITED STATES**  
by Wesley C. Mitchell, Willford I. King, Frederick R. Macaulay and  
Oswald W. Knauth  
Vol. I (1921). A summary of the amount and distribution of in-  
come, 1909-19. 152 pp.
- \*2 Vol. II (1922). The methods and estimates upon which the results  
described in Vol. I are based. 440 pp.
- 3 **DISTRIBUTION OF INCOME BY STATES IN 1919 (1922)** 30 pp., \$1.30  
by Oswald W. Knauth
- \*4 **BUSINESS CYCLES AND UNEMPLOYMENT (1923)** 405 pp.  
by the National Bureau staff and 16 collaborators  
Results of an investigation made for the President's Conference on  
Unemployment.
- \*5 **EMPLOYMENT, HOURS AND EARNINGS IN PROSPERITY AND DEPRESSION,  
UNITED STATES, 1920-22 (1923)** 147 pp.  
by Willford I. King  
Supplements *Business Cycles and Unemployment*.
- 6 **THE GROWTH OF AMERICAN TRADE UNIONS, 1880-1923 (1924)**  
by Leo Wolman 170 pp., \$2.50
- 7 **INCOME IN THE VARIOUS STATES; ITS SOURCES AND DISTRIBUTION, 1919,  
1920 and 1921 (1925)** 306 pp., \$3.50  
by Maurice Leven; based upon Dr. King's estimates of the national  
totals.
- 8 **BUSINESS ANNALS (1926)** 380 pp., \$2.50  
by Willard L. Thorp  
A descriptive summary of business conditions in the United States,  
England, France, Germany, Austria, Russia, Sweden, The Nether-  
lands, Italy, Argentina, Brazil, Canada, South Africa, Australia,  
India, Japan and China for periods from 36 to 136 years, with an  
introductory chapter, "Business Cycles as Revealed by Business An-  
nals." by Wesley C. Mitchell.

\* Out-of-print

- 9 **MIGRATION AND BUSINESS CYCLES (1926)** 256 pp., \$2.50  
*by Harry Jerome*  
 A statistical study of cycles in the supply of labor over a century of American experience.
- 10 **BUSINESS CYCLES: THE PROBLEM AND ITS SETTING (1930)** 489 pp., \$5.00  
*by Wesley C. Mitchell*  
 The first of four volumes of which the second and third are in progress.
- \*11 **THE BEHAVIOR OF PRICES (1927)** 598 pp.  
*by Frederick C. Mills*  
 A pioneer study of the inter-relations of commodity prices, individually and by groups.
- 12 **TRENDS IN PHILANTHROPY (1928)** 78 pp., \$1.00  
*by Willford I. King*  
 Contributions in a typical American city (New Haven, Conn.).
- 13 **RECENT ECONOMIC CHANGES (1929)** 2 vols., 950 pp., per set, \$7.50  
*by the National Bureau staff and 15 collaborators*  
 An analysis of developments in the United States, 1922-28, made for the Committee on Recent Economic Changes of the President's Conference on Unemployment.
- 14 **INTERNATIONAL MIGRATIONS**  
 Vol. I (1929), Statistics 1,112 pp., \$7.00  
 Compiled on behalf of the International Labour Office, with Introduction and Notes by Imre Ferenczi, and Edited on behalf of the National Bureau of Economic Research by Walter F. Willcox.
- 18 Vol. II (1931), Interpretations 715 pp., \$5.00  
 Analyses of migration statistics for twenty countries by as many writers, edited by Walter F. Willcox.
- \*15 **THE NATIONAL INCOME AND ITS PURCHASING POWER (1930)** 394 pp.  
*by Willford I. King*  
 The fifth National Bureau publication on national income. Details of the annual changes in national income and its purchasing power from 1909 to 1928.
- 16 **CORPORATION CONTRIBUTIONS TO ORGANIZED COMMUNITY WELFARE SERVICES (1930)** 347 pp., \$2.00  
*by Pierce Williams and Frederick E. Croxton*  
 Sponsored and endorsed by a national committee of industrialists. Data for nearly 150 cities in the United States are analyzed.

\* Out-of-print

- 17 **PLANNING AND CONTROL OF PUBLIC WORKS (1930)** 260 pp., \$2.50  
*by Leo Wolman*  
 The results of an investigation into the relation between expenditures for public works and prevailing economic conditions in the United States, continuing, with the aid of the Department of Commerce, the surveys made for the Committee on Recent Economic Changes.
- 19 **THE SMOOTHING OF TIME SERIES (1931)** 172 pp., \$2.00  
*by Frederick R. Macaulay*  
 Explains time-saving yet scientific methods of graduating economic series.
- 20 **THE PURCHASE OF MEDICAL CARE THROUGH FIXED PERIODIC PAYMENT (1932)** 308 pp., \$3.00  
*by Pierce Williams*  
 A study made at the request of the Committee on the Costs of Medical Care to discover the extent to which people in the United States make use of the principle of insurance to secure medical and hospital care.
- 21 **ECONOMIC TENDENCIES IN THE UNITED STATES: ASPECTS OF PRE-WAR AND POST-WAR CHANGES (1932)** 639 pp., \$5.00  
*by Frederick C. Mills*  
 Continuing the general price studies of the National Bureau and extending work done for the Committee on Recent Economic Changes.
- 22 **SEASONAL VARIATIONS IN INDUSTRY AND TRADE (1933)** 450 pp., \$4.00  
*by Simon Kuznets*  
 Analysis and statistical description of the seasonal problem. Food and cotton products, automobiles and construction are selected for detailed study. Regional, inter-industry and temporal aspects of seasonal variations are discussed, as well as the social burden imposed by seasonal variations. Seasonal indexes for about 700 series are presented in the Appendix tables.
- 23 **PRODUCTION TRENDS IN THE UNITED STATES SINCE 1870 (1934)**  
*by Arthur F. Burns* 363 pp., \$3.50  
 Summary chapter by Wesley C. Mitchell. Dr. Burns presents the results of an intensive study of the production trends of individual industries and of the trend of total production. Dr. Burns finds that the rates of growth of individual industries decline as their age increases; that the economic system is characterized by major cyclical swings, and that these major swings are related to business cycles. The study of individual commodities is supplemented by a detailed analysis of production indexes; in an appendix is given a complete tabulation of over one hundred production series—many of them inaccessible to most students.

24. **STRATEGIC FACTORS IN BUSINESS CYCLES**. (1934) 238 pp., \$1.50  
by John Maurice Clark

Introduction by the Committee on Recent Economic Changes, for whom the study was made. The six Parts of the volume are: I. Theoretical Approach to the Problem; II. Typical Cycle Patterns; III. General Movements, 1922-29; IV. Special Features of the Last Cycle; V. Another Approach: Meaning and Requirements of Balance; VI. The Strategic Factors.

25. **GERMAN BUSINESS CYCLES, 1924-1933** (1934) 283 pp., \$2.50  
by Carl T. Schmidt

I. The Treaty of Versailles, Inflation and Stabilization; II. Review of Economic Conditions; III. Statistical Analysis of Cyclical Fluctuations in Selected Time Series (based upon a technique developed by the National Bureau of Economic Research). Dr. Schmidt attempts "to sketch the contours of the rhythm of a particular economy over a limited period, to direct attention to *unique* aspects of its cyclical behavior, and to offer some explanation."

NATIONAL BUREAU OF ECONOMIC RESEARCH BULLETINS

Annual Subscription (Five Issues), \$1.00; Single Copy, 25 cents